CONVENTION ISSUE

INFORMATION LETTER

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Proceedings of the 42nd Annual Convention

OVER-ALL problems ranging from production at the source through distribution and merchandising to efficient servicing of the consumer were covered in the various sessions of the over-all Canners Convention, built around the 42nd Annual Convention of the National Canners Association, in Atlantic City, January 14 through 19.

Canner-grower relations constituted the theme of one of the important sessions; the technicalities of coping with residue hazards were dealt with at another; various technological problems were covered by experts at two technical conferences; a session for fish canners stressed efforts to meet world-wide protein shortages and international considerations for conservation and development of fisheries; merchandising techniques and the proper promotion of canned foods were presented at a joint meeting of canners with wholesale grocers as well at a special Symposium; the necessity for maintaining conditions conducive to a free competitive economy was stressed by the speakers at the Opening General Session.

Thus, all facets of the over-all industry were covered at some place in the proceedings, and all facets of the over-all industry appeared to be represented in the attendance—canners and other food producers; machinery and supplymen; canned foods brokers and other sales representatives; all types of buyers and distributors—wholesale grocers, chain store and supermarket executives; food technologists, agronomists, and other agricultural scientists; government representatives of agencies dealing with agricultural controls, business statistics and economy, procurement, and field and factory research.

Preliminary estimates of the total attendance of these industry representatives at this year's Convention place the figure at between 12,000 and

Convention Issue

This issue of the INFORMATION LETTER is devoted to the proceedings of the 42nd Annual Convention of the National Canners Association, held last week in Atlantic City. It carries a running account of the various meetings and reproduces texts of addresses made at the general sessions, the joint grocer-canner conference, the conferences conducted by the Research Laboratories, Raw Products Bureau and Fishery Products Division and the meeting of the N.C.A. Board of Directors.

1949 OFFICERS PICTURE AT RIGHT

Shown from left to right, standing: Carlos Campbell, Secretary; John F. McGovern, President; Henry P. Taylor, Vice President. Seated: Frank E. Gorrell, Treasurer.

13,000, according to the Atlantic City Convention Bureau.

In the resolutions voted by the N.C.A. at its Closing General Session on January 19—

Rigid f.o.b. factory pricing was condemned as detrimental to the interests of agriculture, food processors and the Nation's economy, and clarification of the legality of pricing methods now in use was sought.

Greater flexibility was called for in the administration of the Federal Food, Drug and Cosmetic Act to permit processors to make available to consumers the benefits of improved processing techniques.

Reaffirmation was made of the Association's stand for descriptive labeling and its adoption by every canner and merchandiser of canned foods was urged.

Appreciation was expressed to contributors to the Association's buildings fund, to President Cumming for his leadership as president in 1948, to the speakers who contributed to the Convention program, the press and radio representatives who publicized it, and respect was paid to the memory of the canning industry leaders who were lost to the industry by death during the year.

(Full text of the Convention Resolutions appears on page 91.)

The National-American Wholesale Grocers Association began its annual convention on January 11 and closed on January 14, the date which signalized the opening of the Canners Convention and the official arrival of canners, canned foods brokers, chain and supermarket executives and machinery and supplymen. Opportunity for canner-broker-buyer contacts was accorded in a session jointly sponsored by N.A.W.G.A. and N.C.A., devoted to the general theme of canned foods promotion. With the presidents of the two associations acting as alternate chairmen (Arthur W. Lutz and Howard T. Cumming, respectively) the following speakers were heard:

Hal W. Johnston, chairman of the publicity committee of the C.M.&S.A., who described the vast exhibit of that organization, occupying 150,000 square feet in Convention Hall, and announced the preview scheduled for that evening.

William H. Schille, president of the Biddle Purchasing Company, who reviewed the recent growth of the canning industry and indicated that prospects are favorable for good business in 1949.

John L. Baxter, H. C. Baxter & Bro., and member of the N.C.A. Conference Committee, who described the problems of the seasonal canner and pointed to the desirability of teamwork principles in the operations of farmer, canner, broker, buyer and merchandiser.

G. T. MacCartney, merchandise manager of the H. D. Lee Company and a director of N.A.W.G.A., who urged the heightening of educational efforts to tell the consumer about the advantages and benefits of canned foods and,

Morris I. Pickus, president of the Personnel Institute, who described methods of evaluating and training the salesmen who represent canners in their contacts with buyers.

(Full reproductions of the above addresses are carried in the section of this issue starting on page 34.)

Saturday and Sunday of Convention week were given over to contact work between canners, brokers and buyers, and to visiting the machinery and supplies exhibit. Certain of the preliminary meetings of the N.C.A. also were held during these two days—various committees, the Administrative Council, and the N.C.A. Board of Directors. The report of the Directors meeting and of those committees whose chairmen reported through the Board, is published in the section beginning on page 94.

N.C.A.'s Opening General Session was held Monday morning, January 17, in the Ballroom of Convention Hall with attendance of nearly 3,000. Members of the N.C.A. Convention Committee handled the details of escorting the guest speakers to a pre-program reception in Association headquarters on the Musician's Balcony, and from there to the stage. The proceedings were opened with an invocation by Reverend R. F. Garnet, pastor of St. Andrew's-by-the-Sea Lutheran Church, Atlantic City, whereupon President Cumming took over as presiding officer and made his opening address.

Mr. Cumming advised canners to make sure their 1949 packs are adequately financed for the orderly marketing of the products. Failure to plan properly, he said, could easily bring about declining prices which cannot be offset by declining costs.

CARLOS CAMPBELL
Secretary

JOHN F. McGOVERN
Elected 1949 President

MR. McGOVERN is director of public and industrial relations, Minnesota Valley Canning Co., Le Sueur, Minn. With that firm since entered canning business in 1938. Has taken active leadership in canning affairs. Was chairman of N.C.A. Legislative, Manpower, Social Security Committees. Led implementation of national farm labor program. Was president, Minnesota Canners Association, and Minnesota Employers Association.

Born, 1887, Arlington, Minn. Received Bachelor of Law degree, University of Minnesota. Was named quarterback on Walter Camp's first All-American team in 1909. After serving as sports editor, *Minneapolis* (Minn.) *Journal*, he engaged in law practice; and had own law firm in Washington, D. C. Served as president Washington, D. C., chapter, Minnesota Alumni Association. Also one of organizers and president, Washington Touchdown Club.

Is chairman, University of Minnesota Alumni Association national committee for 1949 Greater University Fund campaign. Headed Sister Kenny drive in Minnesota to raise funds to fight polio.

"We may hope for lower costs of fruits and vegetables for canning," he stated, "but we can hardly expect any important declines so long as we have a government price support program that subsidizes crops grown in competition with canning crops. The present support program, though improved by certain flexible price features, tends to put a squeeze on the canner and to stifle the effort of the consumer to obtain lower-priced canned foods."

The speaker stated that labor costs will remain high because industrial activity will continue at the present tempo and the "artificial shortening" of labor supply "by the operation of our unemployment insurance laws. We shall still have to import labor while thousands of people are supported in idleness."

He suggested an all-out selling campaign in 1949, saying that "The canner who does a good job of advertising and promotion will be ahead of the canner who does nothing. The canner who delivers the best value to the buyer will get the most desirable business. The canner who is everlastingly customer-conscious will get the best possible results."

Following his opening address, Mr. Cumming recognized Chairman Marc C. Hutchinson of the Nominating Committee, who made the nominations of officers and directors for 1949. These nominations were unanimously voted by the Convention, and President-elect John F. McGovern was introduced and seated on the platform for the balance of the program. *(For full list of officers and directors see page 92.)*

With Mr. Cumming presiding as chairman the Opening Session then heard the following speakers:

H. Thomas Austern, N.C.A. Counsel, whose title was "Crystal Clear Confusion—the New Legal Rules of Pricing" and whose discourse covered the five types of selling prevalent in the food industry and the confusion that has been created through recent Supreme Court and Federal Trade Commission decisions.

The Honorable Lowell B. Mason, Acting Chairman of the Federal Trade Commission, who told his listening audience that there is internal decay ahead of us if we attempt to maintain laws and regulations which are so unfair in the spirit of free competition that they defeat their own purpose.

The Honorable Harold E. Stassen, president of the University of Pennsylvania, who stated that economic freedom is inseparable from other freedoms, and warned that its loss may lead to slavery for mankind. He pointed to the first decline of coal production in England in the first year of government handling of that industry.

(Full reproductions of the addresses of Messrs. Cumming, Austern, Mason and Stassen appear in the section beginning on page 12.)

With Julian McPhillips, Chairman of the Fishery Products Committee, as presiding officer, the Fishery Products Conference on Monday afternoon had as its theme the growing importance of fisheries in satisfying the world shortage of protein foods, the efforts of fishery researchers to increase productivity to alleviate the shortage, and the manner in which the United States is cooperating in international agreements designed to conserve and develop fisheries of the high seas. Addresses were made by Dr. L. A. Walford, Chief, Branch of Fishery Biology, U. S. Fish and Wildlife Service, and by Dr. W. M. Chapman, Special Assistant to the Under Secretary, U. S. Department of State. *(These are reproduced in the section starting on page 44.)* Another important item on the program of this conference was the showing of a motion picture, "It's the Maine Sardine," offered through the courtesy of the Maine Sardine Canners Association, the Maine Sea and Shore Fisheries Commission and the U. S. Fish and Wildlife Service.

Another conference program held on Monday afternoon, was that on Insecticides, presided over by Dr. Charles H. Mahoney, Director of the N.C.A. Raw Products Bureau, and staged under the joint auspices of the Bureau and the N.C.A. Laboratories. *(Papers presented at this session are reproduced in the section beginning on page 57.)*

The Second General Session of the Convention, with President Cumming presiding, took place Tuesday morning, January 18, in Convention Hall, and was devoted to the Symposium on the Merchandising of Canned Foods, with Harold F. Patterson, executive

(See *Convention Proceedings*, p. 98.)

HENRY P. TAYLOR
Elected 1949 Vice President

MR. TAYLOR is president, Taylor & Caldwell, Inc., Walkerton, Va., farming and canning, normally producing about 80 percent of its raw products on self-operated farms. He has been an N.C.A. member since entering canning in 1913. Served two terms as Director; member, various Association committees.

Entered canning with Stansbury Canning Co., Walkerton; became manager, 1916. Resigned, 1917, to enter armed services. Went overseas with 29th Engineers; commissioned 2nd lieutenant in France serving with 12th Field Artillery in Second Division.

Mr. Taylor leased a cannery in Walkerton in 1921; later bought it. C. C. Caldwell of Walkerton entered the business in 1925, and the firm became known as Taylor and Caldwell, incorporated as partnership in 1930.

Born, 1891, in Richmond, Va., he was educated at McGuire's School there, and University of Virginia. Later studied at University of Grenoble and in Paris, France. Received A.B. and M.A. degrees at the University of Virginia. Elected to Phi Beta Kappa.

FRANK E. GORRELL
Treasurer

Tribute to Howard T. Cumming

By Russell H. Winters

Uncompromising standards of excellence in the execution of purpose is an attribute of men of dead and true accomplishment. Such sterling quality reflects only in the work of Master craftsmen. Their names and their works are a treasure unto this day. Some craftsmen have left treasures in oils, some in music, some sculptured in stone, some fabricated in silver, and some in other forms.

Howard Cumming, your uncompromising standards of excellence as an organizer, executive and counselor cause us to place your name within our industry's Hall of Fame as an outstanding Craftsman.

You have left your Hallmark of quality so indelibly fixed in the history of this industry it will remain sharp and well defined throughout the years. It will be an inspiration and a goal for your successors.

We in the N.C.A. as well as your host of friends everywhere, Howard, appreciate the sterling quality of your character, leadership, and friendship.

It is now my privilege on behalf of every member of the N.C.A. and its staff to present to you this gift. We present it not because of its intrinsic worth or value, but as a lasting remembrance of this, another success in your career.

Opening General Session

GREETINGS TO THE 1949 CONVENTION DELEGATES

By Howard T. Cumming, President National Canners Association

It is with real pleasure and satisfaction that I extend a most cordial greeting and welcome to the members of the National Canners Association and our many associates and friends who are meeting with us at this time of our Annual Convention. Canned foods have come to be such an important part of our national food supply that a gathering of all those concerned with their production and distribution is an important occasion. We of the National Canners Association are happy and proud to sponsor these meetings, and it is our sincere hope that real and lasting benefit may come to all of you who are here with us.

It would be out of place for me at this time to undertake to review in any detail the activities in our industry during the past year. But it may be of interest to very briefly refer to two conditions that have developed that may have an important bearing on the year that lies ahead of us.

The 1948 pack of canned fruits, vegetables and juices was somewhat below that of 1947, which, in turn, was below the peak pack of 1946. Even so, it may be safely said that the pipelines emptied during wartime rationing have been refilled. In fact, some few items may be in surplus. But having in mind our increased population and our increased food consumption per capita, and assuming continued full employment at perhaps even higher wages well into 1949, which seems reasonable *statistically*, the over-all picture is sound—and that in spite of a temporary slowing down of movement and some few soft spots in the market. Except for a few commodities, some of which are in oversupply and some in undersupply, the over-all picture is reasonably well in balance.

HOWARD T. CUMMING

Retiring President of the N.C.A.—1949 Finance Committee Chairman

Looking ahead, our problem is to keep it in balance, and that strongly suggests that each of us as he plans his 1949 pack makes certain that he is adequately financed and that he can market his pack in orderly fashion. Failure to so plan could easily invite declining prices which cannot be offset by declining costs. We may hope for lower costs of fruits and vegetables for canning, but we can hardly expect any important declines so long as we have a Government price support program that subsidizes crops that are grown in competition with canning crops. The present support program, to be sure somewhat improved by the flexible price features that apply to some commodities this year, tends to put a squeeze on the canner and to stifle the effort of the consumer to obtain lower priced canned foods. Containers will cost more than they did in 1948. Surely labor costs cannot decline with industrial activity continuing at the present tempo and the labor supply artificially shortened by the operation of our unemployment insurance laws. We shall still have to import labor while thousands of people are supported in idleness. So, whereas 1948 has brought us to an approximately balanced situation, 1949 could easily find us with an oversupply which would be unfortunate for grower, canner and distributor.

From the beginning of the war through 1947, we canners, like so many others, had no serious selling problem. But during 1948 we found it necessary to again get out and sell. There was evidence of this both at the canner and distributor levels in intensified advertising, promotions and sales of canned foods. It is a foregone conclusion that in 1949 we will have to bring to bear everything we possess in the way of selling effort—not only that we may compete with each other, but that our industry may successfully compete with other foods that are arriving on the market in increasing quantities and at lower prices.

We shall need to exploit every value we can introduce into the packing and selling of canned foods. The canner who packs the best possible quality for the grade he is selling will have an advantage over the canner who does less than that. The canner who does a good job of advertising and promotion will be ahead of the canner who does nothing. The canner who delivers the best value to the buyer who uses his own label will get the most desirable business. The canner who is everlastingly customer-conscious is sure to get the best possible results. The year 1949 will call for all we have in packing skill and selling effort.

In conclusion, it would be easy and pleasant to express unlimited confidence in our ability to overcome all difficulties and sail through 1949 with flying colors. It is much more realistic and honest to freely admit that 1949 can be a critical year in this industry. But at the same time let's agree that it is largely our individual responsibility and within the power of each of us to make it what it ultimately turns out to be. It can be a good year if we as a group of business men have the courage to make it that.

CRYSTAL CLEAR CONFUSION—THE NEW LEGAL RULES FOR PRICING GOODS

**By H. Thomas Austern,
Counsel for N.C.A.,
Washington, D. C.**

Ninety years ago in Cleremont County, Ohio, a native Midwesterner named Thomas Duckwall began the canning of tomatoes on his farm at Locust Corner. He hauled his pack to Cincinnati by wagon, and sold it for the enviable price of $4 a dozen. In those days the business seemed attractive. Twenty-five years earlier Thomas Kensett had started a canning business in Baltimore, and William Underwood even before then in Boston. Perhaps Tom Duckwall had heard—and you today might be surprised to learn—that Nicholas Appert, the Frenchman who first discovered the art of preserving food by heating it in a sealed container, had lived happily and managed his business to the ripe age of 91.

Often in the last few years I have wondered what these pioneer American canners—Duckwall, Kensett, and Underwood—would think of our industry of today. Without doubt, they would be astonished by the size of the pack and by its diversity. Incredible would seem the nationwide acceptance of canned foods as an essential part of the home larder with the can-opener the chief implement of the happy bride. Intriguing to these early canners would be the absence of mystery in the processing art, and its replacement by wide scientific research and advanced technology.

I think, too, they might be struck by the low prices for which consumers today obtain canned foods. Duckwall got $4 a dozen for tomatoes in 1860; Underwood sold his in New England in 1850 at $3; and in 1868 apricots brought $7.50 a dozen in California. *But* measured in terms of the buying power of the dollar in 1860 against its exchange value in 1949, these prices were roughly equivalent to $16, $12, and $30 a dozen. Comparing these with today's prices, our pioneer canners would have to say that their business progeny were doing a good job for the consumer.

Complexity of Government

Utterly baffling, however, to our Nineteenth Century processors would be the degree to which the present-day canner has to concern himself with governmental rules and regulations in order to do business. To them any kind of income tax was unknown—as were Fair Trade laws or steel allocations or export controls or sugar quotas or standards of identity or Walsh-Healy regulations or M-81 orders. As baffling as atomic energy would be our system of Federal agricultural controls and support prices. Even were its meaning clear, the Robinson-Patman Act would to them appear fantastic. And if Commissioner Mason will forgive me, completely incomprehensible to Duckwall, Kensett and Underwood would be the appearance at a canners' meeting of a Federal Trade Commissioner—or of a lawyer to discuss new legal rules as to how goods may be sold.

For no matter how beset your business life may now appear to be—or perhaps become during the Eighty-First Congress—you cannot escape the impact of these new ideas about the legality of delivered price selling and when and how a seller may meet competiton.

The most fascinating thing about this newly discovered legal disease is that almost all American industry seems to be infected. The illness is called illegal geographic pricing. Its principal symptom is the pricing of goods at or from some point of delivery other than the place where they are manufactured. Until very recently an extraordinary thing about the modern American economy has been the relatively unobtrusive part that transportation played in the laid-down cost of goods.

It was not always so. Many of the world's great mercantile fortunes were founded on successful ventures in carrying goods from one place to another. Waiting "until my ship comes in" had real meaning in the days when one successful voyage to China, around the Cape of Good Hope to California, or to the West Indies might lay the groundwork for opulence. In those days what is now called a delivered price was the only price. The hazards and cost of transport were so great that the price of goods at the point of manufacture bore no necessary relation to their price at the point of consumption.

The value of canned foods—or steel or coal or any other commodity—depends upon their being brought to the place where they are needed. "Carrying coals to Newcastle" always expressed business foolishness. This is what the economists call the value of place. It is part of our everyday understanding and is only occasionally thought about. Indeed, the value of place is not limited to economic goods. You will all recall the wartime story of the G.I. in Australia whose glowing accounts of the maidens in Melbourne led his girl back home to write asking him what the Australian girls had that she did not have. He replied, "Nothing, but the point is they have it here."

With the development of railroads, published freight rates, the postal system, the telegraph, telephone, and teletype—with ready acceptance and exchange of checks, sight drafts, and the other paraphernalia of modern credit—it became possible for a distant buyer to purchase goods f.o.b. a remote factory and to know within reasonable limits how much they would cost when delivered to him.

Yet for many reasons the more ancient system of delivered price selling has continued. Many forms still survive in the food industry and in the sale of canned foods and in the purchase of canning supplies. These are familiar to you, and need only brief description. With your permission, I should like to outline briefly the characteristics of the five principal types of selling so that together we may make a legal diagnosis of their present validity.

Pricing Systems Enumerated

The first and simplest one is the selling of goods at the same price delivered anywhere in the United States. This is called a national uniform delivered price. It is used equally in the sale of United States postage stamps, dollar watches, and many food products including canned meats, specialties, and some brands of canned vegetables.

As our second patient, let us look at a variation of the national uniform delivered price—the selling of goods on a zone price basis. Here the price is the same delivered anywhere within one price zone, but the delivered prices vary as among price zones. This method of selling is also familiar in the legend on price lists "Higher west of the Rockies." It may surprise you, as it did me, to learn that zoned pricing is widely used in selling many canned food specialties including baby food and soups.

Our third and fourth afflicted sales methods are more complicated forms of delivered price selling which are not often used by canners in selling their goods, but which they encounter every day in purchasing important supplies.

One of these is called single basing point selling. In this method, the delivered price is made up by adding the cost of freight from one factory to the base price at that factory. That alone is not objectionable. But it sometimes happens that the seller builds another factory nearer to the buyer and continues to sell at the same delivered price.

"Phantom Freight"

For example, a manufacturer with a factory in New York may sell in Chicago on a delivered price which he calculates by adding to his New York price the rail freight to Chicago. If he develops a good market in Chicago, he may decide to build a new factory there, and continue to sell at the same delivered price. But when he does so, he is necessarily delivering goods from his Chicago factory on the fiction that they were shipped from New York. He is charging in his de-

livered price what is called "phantom freight"—the transportation charges from New York on goods which never move from New York to Chicago. Even though the Chicago buyer is paying no more than he did before the new factory was established there, it may surprise you to learn that a single basing point delivered price system which includes "phantom freight" is now regarded both as an economic and legal wrong.

This third pricing method will be recognized by all of you as the famous Pittsburgh-Plus system. Formerly, all steel prices were calculated at the Pittsburgh mill price plus freight from Pittsburgh. It made no difference that the steel was in fact produced and shipped from Gary, Indiana. In every case the delivered price was the Pittsburgh mill price plus freight. The result was that a buyer in Indiana located next to a steel mill paid more than a buyer in Ohio who was farther away.

An even more complicated kind of delivered pricing system is called multiple basing point selling. That formidable name for our fourth patient merely describes the system familiar to anyone who has bought cement or other building materials. Every seller takes as his delivered price the price charged by the competitor nearest to the customer. He adopts the competitor's factory price and adds freight to the buyer's location to make up his own delivered price. In doing so, he absorbs the difference in freight cost. The frequent result is that those nearer the factory of a particular seller may pay more for the same goods than those located farther away but nearer to a competing factory. As the sellers reach out for more distant markets, they absorb more freight. Every seller has the same price at every point—what are called matched prices prevail—and the buyer pays the same price no matter from whom he buys. Every seller insists, however, that he is only meeting the competition of others in this kind of delivered price selling.

Lastly, and of vast importance to the canning industry, the infection of illegality is not limited to delivered price selling. Equal difficulty exists in the case of products sold f.o.b. factory where the seller reduces his f.o.b. price to absorb or to equalize freight to a competitive factory nearer to the customer. This fifth applicant for legal doctoring of course is not delivered price selling, but it is controlled by the same rules.

Needless to say, many of the important supplies purchased by canners are sold f.o.b. factory with freight equalized in this fashion. Practically all metal containers are sold on a freight equalization basis, as are many of the other products you buy.

In selling your packs, competitive location freight-wise is always important. The bulk of canned foods is sold f.o.b. cannery. Yet the recent survey by the Association revealed that the absorption of freight to a common shipping point—or a reduction in the f.o.b. cannery price to permit competitive selling in a distant market—is a commonplace in the canning industry.

Many California fruits are priced f.o.b. dock Bay Area, or Stockton, or other shipping point, which means that the canner absorbs freight from his inland cannery to the dock. Some canned foods in Maine are sold with freight equalized to Portland, and much of the Florida citrus pack is delivered f.o.b. Tampa, though canned at some distance from that city.

It is likewise no secret that canners who are located at a freight disadvantage from large consuming areas often find it necessary to reduce their f.o.b. cannery prices on certain sales to compete in those distant markets. Peas canned in the Pacific Northwest travel 3,100 miles to Eastern markets, and New York canned vegetables are often sold in the mid-West. In like fashion, mid-West canners selling on either Coast must meet local competition. In many of these sales canners' f.o.b. factory prices must be reduced to equalize competitors' freight advantages. This is merely another way of absorbing freight to meet competition. It is likewise subject to grave legal challenge.

This brief description of these five kinds of selling and pricing has been necessarily oversimplified. In any one industry there may be a combination of several kinds of delivered pricing or freight absorption. Practices are as varied as the types of products and factory locations.

Use of Several Methods

In the canning industry the unique phenomenon exists that a canner may employ several methods at the same time. One company may sell on a delivered price basis in a particular area and on an f.o.b. basis in making sales to other markets. Some canners sell one or two products on a uniform national delivered price or a zone price, and other products wholly f.o.b. cannery. Others absorb some freight in shipping by water but do not do so in making rail shipments. About the only common denominator appears to be the fact that some competition always exists in the form of a competitor having a freight advantage and every canner at some time or other has had to reduce his price to meet this competition.

Since we seem to have the symptoms—both in what we buy and in how we sell—it is only natural that you ask to be told the nature of the legal disease and perhaps whether it is fatal. Are all five of these pricing methods illegal?

Without resorting to medical Latin or to legal legerdemain, I must confess that I don't know. Few lawyers will give you definite answers. Instead, they will ask you, as I shall, to let them attempt to explain three theories about delivered price selling and freight absorption which have been developed by the Federal Trade Commission.

Whether what many of you are now doing in your buying and selling is illegal depends upon how far the Supreme Court has made these theories the law of the land. Whether the confusion can ever be dispelled depends upon what Congress may do with the Johnson Bill.

FTC Objections

Before examining remedies, however, we must understand the disease. It is not one, but three. To the legal doctors at the Federal Trade Commission there may be any one of three difficulties with delivered price selling or freight absorption.

The Commission's first objection is that these practices are clearly illegal when used by all of the sellers in an industry by agreement or conspiracy. There is nothing novel about this view. For almost 60 years since the Sherman Act was passed in 1890, it has been illegal for competitors to agree on price or on how they will sell their goods. If all of the sellers in an industry get together and agree to use only a particular method of selling, they violate the antitrust laws.

The only question is one of proof. I shall leave it to Commissioner Mason to tell you how the Trade Commission does or does not find that a conspiracy exists in a particular case. Because most of the people in an industry use the same method of selling at about the same time and arrive at the same delivered price may permit diametrically opposite conclusions. They may have agreed to do so, or they may be aggressively competing with one another. The paradox is that very often both conspiracy and competition may equally yield identical prices.

In its simplest form this charge of unlawful agreement among competitors comes down to a question of belief. Abraham Lincoln, who was an excellent lawyer, put it this way almost 100 years ago. He told about all of the farmers in one county whittling on ax handles. On the fourth of July they assembled at the county seat and placed their whittlings side by side. If all of the cross cuts in each man's whittling identically matched those in every other man's whittling, Lincoln said he would find it difficult to believe that they had not agreed in advance about their whittling.

This first theory that delivered price selling may result from an unlawful conspiracy is relatively simple.

But the Commission's second theory flexes the mental muscles of even a Philadelphia lawyer. It has nothing to do with conspiracy but relates to the individual conduct of a single

seller. The basic idea is that any company selling at two different prices is discriminating in violation of the Robinson-Patman Act, and cannot justify giving the lower price as meeting competition.

Where a man sells his goods f.o.b. factory and reduces his f.o.b. price by absorbing freight, there is no difficulty in saying that he is charging two different "prices" at his factory door. But where a man sells on a delivered price basis to everybody throughout the United States, and everyone everywhere pays the same price, it is somewhat difficult to see how a difference in price can exist. Offhand we might all agree that the price of three cent postage stamps is the same at every post office in the United States even though they are printed in and shipped from Washington.

Yet the Federal Trade Commission insists that where a seller ships by common carrier and sells on a delivered basis, the "*price*" of the goods is not what the buyer pays but what the seller realizes after deducting the transportation cost. "Price" to the Commission means factory realization or mill net. Paradoxically, on this view a manufacturer selling to everyone throughout the United States at the same delivered price is charging everybody in the United States a different price because he gets a different factory net from each location.

Time does not permit me to spell out the Commission's economic thinking in support of this idea. Basically it insists that a buyer located nearer to the seller's factory has the right to get a lower price. To deny to him the advantage of his geographic proximity is considered both an economic and a legal wrong. If you carry this theory far enough, you get some weird results. For if the buyer cannot be denied the advantage of lower transportation costs to his place of business, why is he not equally entitled to all other cost advantages? Any seller who in pricing his goods averages his labor costs in several factories or canneries, or averages the cost of raw materials among several factories seems equally to be denying the nearby purchaser his geographic advantages.

The Commission limits its thinking only to common carrier transportation. If a seller uses his own trucks in making deliveries, he can average his transportation costs. But if he uses common carrier railroad or trucking or water freight, he must so price his goods as to get the same factory net from each customer. If he fails to do so, the Commission says he is discriminating in price.

Of course, a discrimination is unlawful only if it injures competition. But last year in the *Morton Salt* case, the Supreme Court said that if there was any possibility of injury, a difference in price would be illegal. As Mr. Justice Jackson observed, this meant that any price differences are illegal if the Commission says they are. As the Commission defines price, every delivered pricing method has in it a potent seed of illegality.

Yet it was always understood that price differences under the Robinson-Patman Act were not unlawful if the lower price were given in good faith to meet competition. Where a seller computes his delivered price to meet that of a competitor nearer to a buyer—or where a canner selling f.o.b. factory absorbs some or all of the freight to equalize with a competitor nearer the customer—he may insist that he is doing so to meet competition. Practically, he would not

H. THOMAS AUSTERN
Counsel for N.C.A.

take less money if he could get more; and in the absence of conspiracy this might be considered a sufficient guaranty of his good faith in meeting competition.

Regularly Meeting Competition

But here again the Federal Trade Commission takes a very narrow view. It insists that a man can meet competition only sporadically—now and then—in isolated transactions. He cannot do so regularly or systematically. The rule was stated in one opinion to be that no one can sell in a way that "constantly results in his getting more money for like goods from some customers than he does from others."

If he meets competition other than in sporadic instances, he cannot under this theory say he is acting in good faith.

If a seller forthrightly announces in his price list, or in his sales contract, that he will equalize his f.o.b. price by absorbing freight to a competitive factory, he is obviously attempting to meet competition systematically and regularly. If a California canner announces that he will sell goods f.o.b. Bay Area, he must be regularly absorbing freight to the dock. Necessarily, where a number of sellers using a delivered price system match the price of competitors, they are meeting competition regularly and systematically.

All of this has a direct bearing on the canning industry. The Robinson-Patman Act makes the buyer equally responsible with the seller for price discrimination. In the case of every supply item which you purchase, on which all sellers offer the same delivered price, or agree to equalize freight, you may be equally guilty of violation.

But the reach of this new theory of price discrimination—and the idea that one cannot in good faith regularly meet competition—is far broader than freight absorption. The Association's recent survey disclosed that most canners regularly meet competition by charging a lesser price in one market than they charge in other areas. Without the opportunity to do so, they lack the freedom to compete in distant as well as nearby markets.

Advantages Seen

It is only fair to say that the survey revealed that a small minority, better located in relation to consuming markets, thought that prohibiting the absorption of freight to meet competition would work distinctly to their advantage.

So much for these new ideas on price discrimination and the objection that delivered price selling and systematic freight absorption by an individual seller may be illegal under the Robinson-Patman Act.

The Trade Commission's third theory is difficult for either an amateur or a professional lawyer to comprehend. It has nothing to do with conspiracy or price discrimination—or the meeting of competition. It is called the theory of "conscious parallel action."

What does that mean? Essentially it is the novel idea that—even where no conspiracy exists—the legality of one man's business conduct depends not on what he does, but on what others are doing. Where in an industry there is no unlawful agreement, but everybody knowingly meets everybody else's competition, and all buyers get the same delivered price or the same laid-down cost, you have a condition of "matched prices." The Commission insists that this is not a truly competitive market—that you can have competition only where the principle of indifference operates—where a seller is utterly indifferent as to who buys his goods and a buyer is completely

indifferent as to whose goods he purchases. The basic notion here is that price alone determines selling. Perhaps this is always true. But if it is, I venture to suggest that a great deal of liquor has been poured by salesmen to no good purpose.

The extraordinary thing about this third theory of the Commission—and the most controversial one—is that the legality of what one man may do, when he does not in fact conspire with his competitors, turns not on what he is doing but on what everyone else may be doing. If everybody does the same thing—engages in what the new vocabulary calls "conscious parallel action"—the Commission views their conduct as though there had in fact been a conspiracy.

The theory is likewise beset with many adjectives. In its policy statements, the Commission recognizes that any company may "meet competition in localities where it habitually encounters" competition, but it still insists "that reciprocal reductions in price" are permissible only so long as they are "sufficiently infrequent and void of industry-wide systematic effect." In other words, one company in an industry may fall into the "habit" of meeting competition, but if its competitors follow suit, the habit becomes illegal for each of them. Thus every businessman literally becomes his brother's keeper!

On this basis, whenever the Commission finds that absent conspiracy delivered prices are being matched in any industry it rules that each seller is engaging in an unfair method of competition. It orders each man to stop meeting the competitive price of other sellers by prohibiting him from charging delivered prices which yield different factory nets. The only lawful method left is flat f.o.b. selling without any freight absorption.

These are the Trade Commission theories. Have they become the law of the land? On this question you can get every kind of opinion. Commissioner Mason has stated publicly that he thinks they have, and many lawyers agree with him.

Supreme Court Decision

Whether they have depends upon what the Supreme Court did in the famous *Cement* case. Mr. Justice Holmes once observed that he thought the nation could survive anything the Supreme Court did. What the Court decided in the *Cement* case caused no excitement; but what it said was most important. The charge was a plain old-fashioned conspiracy. All that the Supreme Court decided was that the Trade Commission could order the cement manufacturers to stop conspiring. But in the course of his 44-page opinion, Mr. Justice Black used four pages to talk Trade Commission language—"mill net," "factory realization," and the vice of regularly meeting competition. When he finished, his opinion looked like a judicial blessing of these Federal Trade Commission theories.

At least one lower court thought so. In the *Rigid Steel Conduit* case two weeks later, the Seventh Circuit affirmed a Trade Commission order—one part of which was not based on conspiracy but the common use of delivered price selling by individual companies but which required each individual seller to use only f.o.b. selling and not to absorb freight.

Only One Pricing Method Safe

Where did these two cases leave the law? In its press releases the Trade Commission insisted that all of its theories had been approved. If this were true, the only completely safe method of selling was flat f.o.b. pricing without ever absorbing freight. I say safe because in addition to the possibility of a Federal Trade Commission proceeding, there is always the threat of a treble damage action for violating the Robinson-Patman Act. In this suit the offending seller may be liable to his customer for three times the amount of the improper freight allowance multiplied by the number of units purchased over many years. There is also in some cases the possibility of criminal prosecution for price discrimination.

But this *crystal clear confusion* is even worse confounded. For by a quirk in the statutes, the treble damage liability exists only for conspiracy or unlawful price discrimination and not for conduct deemed merely an unfair method of competition. It is thus important to know which of the Commission's three theories might make your pricing method illegal and whether you are to be hanged for a sheep or a goat.

As you know, for many industries this confusion and contingent liability was enough to cause rapid changes. The cement, steel, refractories and other industries went to flat f.o.b. pricing. But these same rules cover the selling of coal, chemicals, glass and metal containers, farm equipment, paint, cane and beet sugar, many foods as well as canned products, and a host of other commodities.

If f.o.b. selling without freight equalization alone is lawful, the face of the American economy would be changed and serious dislocations would follow. There is little need for me to detail what might happen in the canning industry. The recent increases in freight rates have of themselves worked dramatic changes. But if methods of selling were changed throughout all industry, it would have a far-reaching impact upon the cost of your supplies, upon what you pay for cans, sugar, fertilizer, and practically everything else. It would have direct impact upon your markets, upon your volume, and upon your growers and the communities in which you operate.

In these circumstances it was not long before Congress became interested. The Capehart Committee held extensive hearings throughout November and early December.

A multitude of witnesses told the Senate Trade Policies Committee of the upheaval that would take place if the Federal Trade Commission theories were applied to American business. The outstanding thing about those who appeared at these hearings was their diversity. They represented big business, and small business—producers of basic materials, fabricators, grocery manufacturers, distributors, retailers,—the entire range of the national economy. They spoke for steel warehousemen in Massachusetts, cement mills in Illinois, steel producers in Chicago, sugar growers in Hawaii, metal manufacturers in Colorado, beet sugar growers in the Rocky Mountains, and many other industries.

Yet despite this diversity in size, geographic origin, and economic function, practically all of them displayed a startling unanimity of opinion. They were opposed to the imposition upon American business of the straightjacket of required f.o.b. pricing.

As buyers, they objected to increased material costs and to being often made dependent upon only one supplier. Not unnaturally, those who were at the greatest distance from their principal suppliers were loudest in their complaints. As sellers, the constant cry was that the maintenance of production required reaching out to distant markets and that any other rule would foster local monopolies and create trade barriers. For the groceries trade, the point was made that a uniform delivered price or a zone delivered price was convenient and economical, and that the day-to-day job of figuring freight costs on many products to thousands of delivery points would in fact increase costs and prices.

Labor Opposes F.O.B. Mill Selling

I might add that the spokesmen for organized labor were both unanimous and vociferous in expressing their conviction that required f.o.b. mill selling would work great hardship on the American working man.

As you might surmise, this problem cuts across all geographical lines and political parties. It is not a partisan issue. With the organization of the Eighty-First Congress, the Capehart Committee became the Johnson Committee. On January 5 Senator Johnson of Colorado introduced a bill, S. 236, to resolve the confusion.

In the next few months you will undoubtedly hear a great deal about the Johnson Bill. If you study it objectively, you will, I am convinced, be impressed with its moderation, its

clarity, and its realistic approach to these difficult problems.

The Johnson Bill does not weaken the antitrust laws. On the contrary, it not only reaffirms the rule that agreement or conspiracy among competing sellers is unlawful, but it also confers upon the Federal Trade Commission additional and important powers to dissipate the results of any conspiracy. Under this new authority the Commission will be empowered, whenever it finds that delivered price selling has been used to implement an unlawful conspiracy, both to order the conspirators to stop conspiring and to require each member of the conspiracy to change his selling practices. For a reasonable time the guilty sellers can be required to establish f.o.b. factory prices and to sell at delivered prices which include no more than the f.o.b. price plus actual transportation costs—with the buyer being given the option to buy either way. Since the bill does not in any way qualify the prohibition against conspiracy, it would, if enacted, not change the decision in the *Cement* case.

Nor will the Johnson Bill in any way modify the rule that a man who injures competition by an unjustifiable price discrimination violates the Robinson-Patman Act. It specifically says that any pricing practice which results in fraud, deception, or coercion is still unlawful.

What the Johnson Bill will accomplish, if enacted, is to dissipate the fog of confusion and dispel the uncertainties now surrounding the use of delivered price selling, the absorption of freight, or the good faith meeting of competition by individual sellers. It does this principally in three ways. It defines "price" to mean what is fixed by the contract between the buyer and the seller. It provides that where competing sellers do not conspire but individually use these pricing methods, the fact that goods are sold at similar or identical prices to buyers does not, in the absence of conspiracy, constitute an unlawful method of competition.

Realistic View

For a legal document, what is says about meeting competition appears to be both realistic and crystal clear. The bill specifies that:

> "Competition may be met in good faith, and in the absence of conspiracy, by the charging by any seller of lower prices to meet competition in any and all markets, regularly, customarily, or systematically, with or without prior announcement."

Finally, the Johnson Bill makes one other change which is quite important. It requires that injury to competition resulting from differences in price shall be realistically viewed. The rule of the *Morton Salt* case that any possible injury to competition will suffice to show illegality is changed. What I hope will become the Johnson Act requires that where a seller charges two different prices, doing so will not be unlawful unless there is a "reasonable probability" that one of three things will happen: That there will be a tendency toward monopoly, that the ability of other sellers to continue to compete will be materially lessened, or that the ability of customers to compete with each other will be materially threatened. Absent some reasonable probability that one of these results will follow, a difference in price will not be an unlawful discrimination.

If the Bill is enacted, the validity of a uniform national delivered price individually charged, in the absence of conspiracy, will no longer be subject to challenge. In the absence of conspiracy, the legality of zone delivered prices will again turn—as it should—on whether the differences among the price zones fairly reflect the differences in average freight. A seller will be free as an individual to meet competition in good faith and in forthright fashion wherever he encounters it. Is not that the essence of competition?

Clayton Act Involved

Do not make the mistake of assuming that the Johnson Bill will be readily enacted. For it touches the Clayton Act—one of our Antitrust laws. In the rugged reaches of competition in the canning industry, there are few who desire any relaxation of the prohibitions against price conspiracy or monopoly. No informed businessman fails to appreciate that absent these bulwarks of our free economy, we might soon be engulfed in the tide of statism which today encircles the world. Yet few in industry fully realize the potency of the antitrust concept as an article of American political faith or the blunt fact that any legislation which can be charged with weakening the antitrust laws has little chance of enactment.

This charge has repeatedly been levied at those who have sought to pierce the fog of confusion in these new legal ideas about delivered pricing, freight absorption and the meeting of competition. I suspect that a like charge will be made against the Johnson Bill even though that proposal in reality would strengthen rather than dilute the antitrust laws. Admittedly, delivered price systems have been utilized in conspiracies and in some instances they have been made the instrument of monopolization. But both conspiracy and monopoly are prohibited by the Sherman Act which most businessmen want to see vigorously and effectively enforced.

It is a fair question whether those in the Federal Trade Commission who have sincerely sought to eradicate conspiracy and to curb monopoly have not ridden their theories too hard. One objective economist has suggested that what is going on is comparable to a doctor forbidding the running of a temperature in order to stop poliomyelitis or to a health official opposing the building of houses because rats sometimes infest them.

It is an equally fair question to ask whether legal rules, which are impossible of compliance without disrupting the whole of the American economy, should not be more narrowly drawn to remedy the particular evil at which they are really aimed. A legal blunderbuss never brought down a monopoly no matter how much the scattered shot may have injured smaller enterprises.

No Certainty Attainable

The real issue perhaps lies deeper. Running through this controversy has been the recurrent notion that no degree of certainty can ever be accorded—that in this area of trade regulation the line between lawful and unlawful conduct cannot be drawn with any reasonable precision—and that the only available technique of government is resort to an administrative agency—to authorize a small group of experts to determine by hindsight in each situation what was or was not proper conduct by a businessman. Less frequently voiced is the further thought that in order to be effective a legal prohibition must bark louder than it bites. If the use of delivered pricing or freight absorptions may be abused by those who unlawfully conspire, the remedial theories should not cast doubt on their use in any circumstances.

I doubt whether Thomas Duckwall, our pioneer canner, would have understood these views. He would have agreed that in our complex modern economy, many rules for the regulation of trade are necessary. In his day there were fewer regulations, but I suspect that they were more religiously obeyed. It was believed that if a man was presumed to know the law, its prohibitions should be clear; and an indictment or other proceeding by the Federal Government was a serious thing—having social as well as economic consequences.

Odd indeed would have been thought the theory that what is to be permitted as lawful or prohibited as illegal should preferably be left to a small group of men—to whom would be given the virtual power to write their own economic theories into the law of the land.

Perhaps Tom Duckwall, with a mind unconfused by today's complexities, might ask why, if the rules of the game cannot be known until the businessman is apprehended and told by an administrative agency to desist, his previous unknowing wrong-doing should carry with it drastic liability for damages or even criminal penalties. In his day it was recognized—and I think it is still widely true—

that many businessmen desire to know the law because they want to obey it as a matter of civic responsibility.

It is therefore important that each of you consider for himself both the immediate issues and this more fundamental question as to what is good government. Of course, if the legal rules of pricing and meeting competition were made crystal clear, many lawyers might be driven to the hazards of the canning business. Yet if Congress does not act and the present confusion is not dissipated, the task of the businessman who wants to know the law, and the performance of the lawyer whom he asks to tell him, may remind us of Samuel Johnson's comment about a dog walking on his hind legs: It is not done well, but the astonishing thing is that it can be done at all.

CANNERS' CHOICE

By The Hon. Lowell B. Mason, Acting Chairman, Federal Trade Commission

Your President invited me to come to Atlantic City and address your convention. This is an honor I have looked forward to because this audience is an important segment of our national economy. It includes everything—agriculture, manufacturing and distribution. It gives employment to a third of a million people. In fact, the billion dollar canning industry is more than just an industry.

In the short time it takes me to speak to you, you will have paid taxes into the Treasury in an amount equal to my entire year's salary. It would be a very good thing if every once in a while every Government employee said to himself, "The funds that make it possible for the Government to serve the people of the United States are supplied by the industry and commerce of this nation."

But there is another reason I wanted to talk to you. Fifty years ago my father stood up in the United States Senate and made the first speech in behalf of a pure food bill. He did that to back up his first legislative effort for raising the standards in the food industry. But it wasn't until 1906 that an association called the National Association of Packers of Pure Canned Foods, together with the Western Packers Association, and the Atlantic States Canners Association, got something done. They asked Congress to have some sort of pure food law. It wasn't until June 30, 1906, that Harvey W. Wiley's bill was enacted into law.

In 1907 Frank Gorrell and the canners got together, and industry effectively put its shoulder behind the law they had helped pass and smoothed out the machinery so that the public got the full importance of that statute.

I wish my father could see me now; perhaps he can, standing before this group and talking to this representative meeting under the auspices of the National Canners Association. And I think that first bill failed because there was no organized group in the food industry then.

But, gentlemen, we have another problem with us today. In those days the pure food laws were defeated by

LOWELL B. MASON

On a Visit to the N.C.A. Laboratory

the selfish, monopolistic interests in the industry. Has it ever occurred to you that the same thing can happen in bureaucracy? Today you are faced with a situation such as Tommy Austern has described.

I was delighted to come here today and sit here and listen to Tommy take the Federal Trade Commission apart. I suppose you wonder if I feel like the man who was getting up before a group of people and was introduced as the man who would make trouble for all. That is nothing new to me, gentlemen, because at the last convention I addressed down here in Atlantic City, one month ago, I started out my address by saying, "Mr. Chairman and Fellow Law Violators."

How can I defend myself against what Tommy Austern has said? He practically condemned every act of the Federal Trade Commission. I can't start out by saying he is a liar or doesn't know the law because for the past six months I have been telling everybody Tommy Austern was the second best association lawyer in the United States, and there are about 10,000 association lawyers. One of them heard me say that, and he asked, "What do you mean?" I said, "Well, I only said he was the second best. You, yourself are a trade association lawyer."

Tommy got me thinking of some cases which were decided before I got on the Commission, and I am not going to criticize those decisions. There are five of them. There is an easy way to remember them because they all begin with the letter "C." I call them the five "C" decisions:

Cement, Crepe paper, Corn products, Conduit, and Salt.

(I spell "salt" with a soft "c" because it is easier to remember.)

Now, how come we haven't got all you folks in the clink? You are all violating the law. In the first place, the reason we haven't got the canners in the clink is because we would all starve to death. In the second place, we only found out we had this power recently.

We are like the lady who sued a man for calling her a hippopotamus. The judge asked her why she waited 35 years to sue, and she said, "Judge, I just found out what a hippopotamus was."

We have a rope around your necks and we can draw it tight. I am one Commissioner who agrees with Tommy. He says you mustn't take Mason too seriously. We only sue the people who we think are guilty of conspiracy, of doing very illegal things. But the law is as Tommy says and with that I have no quarrel at all. And granting this is the law, the only advice I can give you is how to stay out of trouble with the Federal Trade Commission.

The first piece of advice I will give you is don't conspire to fix prices. Now, to anybody in the canning business that is a big laugh. For the business that has the most rough-and-tumble, devil-take-the-hind-most scramble after customers, I nominate the canning industry.

You have all heard Harold Stassen talk about the "Pillboxes of lethargy". Believe me, there are no pillboxes of lethargy in the canning business. I don't think we have to worry much about Uncle Sam getting after you on price conspiracy.

But there are other things where we really shall get you. You heard Tommy discuss a decision of ours. I am not going to rehash what he has said, but it is this question of parallel action. Let me give you an example. Let's say you've got a pack of sweet peas to sell. The first thing you do is figure out you can sell them for $1.80. (That's a good, cheerful price, I bet you'd like to get it today).

You send your broker around to see the purchasing agent, and he says, "What have you got?" The broker says, "I got some nice, fancy grade, four sieve sweet peas I can give you for $1.80." The purchasing agent says, "I can get them from Joe Glutz for $1.70."

As soon as he says $1.70, the jig is up. Then you know what your competition is charging, which is a dangerous thing according to these decisions. The minute your broker knows what Glutz is selling his goods for, the jig is up because you are engaging in what we bureaucrats call "conscious parallel action" and then, look out for us.

There is a way, however, you can defend yourself against this charge. Make it a point to not find out what your competitors are charging. When your salesman goes around to the customers, equip him with earmuffs. When he goes into a store and quotes $1.80, maybe your competitor is unloading at $1.70. But just before the purchasing agent tells your broker that Glutz is selling his goods for $1.70, have him snap the earmuffs down over his ears. Then your broker can come back to you and say, "That was a swell bunch of customers you used to have. I didn't get any orders for you, but I surely kept you out of trouble with the Government." If you don't find out what the competition is charging, you are safe. If you know what your competition is charging — systematically charging — and follow it, then you are guilty of conscious parallel action. And, brother, what we can do to you then.

Perhaps the word-jugglers and syntax hunters can find flaws in my sketchy description of the five "C" decisions, but they can't find flaws with what Tommy Austern says. A lot of you criticize me because I joke and kid. It has been said it is undignified for a high Government official, but we are really down on the lower rungs of the judicial ladder. But it is the most important office to the business world today because we have quietly accumulated, without any fanfare, the concordance of precedent which we don't exercise against everybody. We are quietly assembling this group of precedents which when the time comes we will be able to enforce, and if we do, the American businessman will wish for the liberty of the Russian peasants.

Folks that are interested in maintaining the status quo are counting on the pill boxes of lethargy. Up to this time, this has been a fight between a small group of Government experts and technicians and economists on one side, and a small group of corporation lawyers on the other. Walter Lippman says that the public waits for those two groups to start fighting and then they'll take one side or the other.

I would like to bring this down to our type of authority, because I would like to break that circle and get it out into the area where it affects the business man.

Let me assure you, never in my life was I as serious as I am this 17th day of January before the National Canners Association when I charge that there is internal decay ahead of us if we attempt to maintain laws and regulations which are so unfair to the spirit of free competition and so unworkable that they defeat their own purpose.

Let me tell you what Frank Gorrell said about this, and he is the godfather of the National Canners Association. He has always maintained that "if a law or regulation is unfair or unworkable, it defeats its own purpose; then the industry owes it to the public as well as to its own members to help in obtaining legislation that is sound in purpose, fair in its provisions, and practical in enforcement."

No Comment on Johnson Bill

I am sorry to refuse comment on Senator Johnson's proposal to strengthen the anti-trust laws by bringing some sense to their administration. Any legislative proposal of Edwin C. Johnson of Colorado is always worthy of study. As a Federal Trade Commissioner, I prefer not to discuss specific legislation except when called upon to do so before the proper Congressional committees, which I shall have to do a week from today.

But I do want to say this about Senator Johnson. In many respects he is like the canners. Those who fight against the encroachment of brass-hatted bureaucracy on the liberties of the people may safely rely on the leadership of this quiet but forceful statesman. In the market place of ideas, the brand name of Edwin C. Johnson on legislative packages stands for the integrity, experience and knowledge of a man who served four terms in the Colorado House of Representatives, one term as Lieutenant Governor and two terms as Governor, and since 1936 he has been in the United States Senate.

As for consumer acceptance, when folks went to market out in Colorado for a public servant in the recent election, two times as many chose the Johnson brand in preference to others. With this background it is a safe bet to say that what he wishes to accomplish is a change in our present dolorous conditions.

Senator Johnson can't accomplish this alone. He is one of a large board of directors elected by the people of this country. This being the case, can you afford to say, "That is a nice law you made, let's go on to the next thing. It's none of my business."

Perhaps we better take Frank Gorrell's advice in looking at the law as it stands today. Ask yourselves, do you want to substitute Government meddling for private individual judgment in the management of your business? Do you want to throw out the window your judicial traditions inherited from our forefathers which held all men innocent until proven guilty? Do you want to ratify the European concept as indicated in the five "C" decisions that once the Government charges you with violating the law, it is up to you to prove your innocence?

Or do you part company with those who claim Government must take over the management of the minute details of every business as these five "C" cases indicate?

This brings me to that part of the talk where the salesman takes his pen out of his pocket and looks for a flat smooth surface for the buyer to write the order blank on. Of course, I came here to sell you something. I think it is the same idea your next speaker wants to sell you. We can't offer it to you at a cheap price. Our forefathers paid plenty for it and the upkeep is high. There is no cut-rate price. But knowing the canning industry as I do, through the activities of its Association, I would say there is only one choice. I do not put your industry in the class of people who tolerate with complacency the upsurge of authority which governmental agencies quietly accumulate. Even though lacking personnel, the Government does not apply the whip to all for the present.

Professor John Jewkes of Manchester, England, carries in the foreword of his new book "Ordeal by Planning" this warning from a newspaper sold on the streets of London a hundred years ago:

"The greatest tyranny has the smallest beginnings. From precedents overlooked, from remonstrances despised * * * springs the tyrannical usage which generations of wise and good men may hereafter perceive and lament and resist in vain. * * * Let it alone and it stands on record. The country has allowed it and when it is at last provoked to a late indignation it finds itself gagged with the records of its own ill compulsion."

Gentlemen, when my father stood on the floor of the Senate 50 years ago, there was no organized voice for a united food industry to back up the legislative scheme he urged. I say he would be very happy to know that today we have such an association as this one whose membership comes from all over the United States to study these questions and to make its wants known to your board of directors—not the gentlemen you just elected a few minutes ago, but your board of directors down in Washington. Let me assure you we are not bureaucrats; we are not in competition. It takes but one vote to hold things up. I can sit in my seat like a clam and take what comes for seven long years, but your board of directors are responsive to what you stockholders and the canners, who are representative of the people in your communities, want. It is you gentlemen that your board of directors wants to hear from.

ECONOMIC FREEDOM

By The Hon. Harold E. Stassen, President, University of Pennsylvania

President Cumming, Mr. Mason, delegates and guests of this 42nd Annual Convention of the National Canners Association, it is a real pleasure to be with you this morning, particularly because it gives me an opportunity to extend my congratulations to an old friend, your President-Elect, "Johnny" McGovern.

Frankly, he is one of the main reasons I am here this morning. He is an old friend of long standing from Minnesota who always responded when I called upon him for various assignments, and I looked forward with keen anticipation to meeting him here this morning and witnessing his election as President of the National Canners Association. Let me say I also learned something about how to be elected at a convention.

I also want to say to you that if he functions as your President as efficiently as he did with the leading citizens of the State of Minnesota, or in fact, in the way he did as an All-American quarterback on the Minnesota football team, you will have a great year in the National Canners Association.

Speaking to you this morning on the subject of "Economic Freedom", I know you all realize that in the wake of World War II every headline, every newscaster, every commentator made it very evident that we are engaged in a world-wide struggle or conflict of ways of life.

There are some very different ideas in the world how men ought to live and how they ought to act toward each other. We all know our own heritage, the vision and determination of the founding fathers of this country and what it has meant in general terms down through the years.

Freedom Challenged

Clearly, in the wake of World War II this question of the freedom of men can be very seriously challenged. A good many hundreds of millions of people today are under absolute domination—political, economic, social; and even in a large measure, religious. We can see that threat, that opposing ideology, and we learn something in spite of its efforts to black out the passage of information. We learn something of what it means to people.

I don't want to talk to you primarily this morning about that extreme which we can see and which we all recognize needs an alert and persistent opposition. I would like to analyze with you very carefully some of the terms of this conflict, and some

HAROLD E. STASSEN
Distinguished Guest Speaker

of the greater dangers that are there in the years immediately ahead, because there are other millions and millions of people in the world who believe just as strongly as we do in the basic freedom of men, who believe just as strongly as we do that men should have civil and political rights and religious freedom, but are more and more on the verge of moving into a different view of economic freedom.

England today is the most striking example. Clearly, no people prize freedom more highly than those people of England. They have shown this with great courage and determination down through the centuries.

But currently in England there is the view that government should take over increasingly the operation of economic affairs, and it is a part of a worldwide approach, described as the "Fabian Socialism", that government should take over and run and operate basic industries, methods of trade, and increasing aspects of the whole economic system.

The view held is that these economic freedoms of people can be taken away, and their fundamental liberties in a social, political and religious sense can be maintained.

One can prove today the truth or falsity of that theory, but I say to you, and I would like to discuss with you to some extent the basis of my view that in my judgment economic freedom—the freedom to buy and sell, to make, to spend, and to build, those economic freedoms—are inseparable from the other freedoms, and that if we lose economic freedom on the face of this earth, men will become slaves in more sense than one.

What is the experience of England? Of course, we should continue to observe it with great care, because if any country in the world can successfully operate an economy by government *they* should be able to do it. They have the greatest skill in government of any nation in the world, developed through generations, through education and experience on a very broad scale. If any people want to hold on to the fundamental freedoms, the fundamental human liberties, they do.

This is what is happening, and it is something we should watch with particular care in the next few years. They have taken over the operation of coal. All coal mining is now handled by the British government. Of course, this does emphasize another point, and that is that government moved in and took over coal because of weaknesses that had developed in the capitalism of coal. As I have said before, and feel strongly, it will turn out to be a great tragedy if they don't concentrate upon improving the capitalism of coal, and backing up and improving their private industry instead of turning it over to government management.

What happened in 1948 in coal in England? There was great pressure on the government to get more coal mined because they needed more coal for their own economic recovery, to fit into the Marshall Plan and for their exports, and for their own use in the rebuilding of the economy of England. That is the story of coal in England in 1948.

They mined fewer tons by far than the 40-year prewar average. For 40 years before the war England mined 230,000,000 tons of coal a year. Last year they could only mine 208,500,000 tons; they were down 21,500,000 tons of needed coal, falling short of the goal they set themselves, by government, at the beginning of the year, falling 2,500,000 tons short of that goal.

To Nationalize Steel

Notwithstanding the beginning and introduction of new approaches to this tremendous effort toward production, they fell far short of their goal. Notwithstanding that progress under political direction, they are proceeding in this immediate year to nationalize steel. The steel production record this past year broke the goal—the highest steel production in history, still under private management. Yet government will go in and take over the operation of steel.

I believe that as the years go on, we'll find again the story that actually has been told in a more limited way in the economic history of the world. There is no equivalent to production

in the resultant standard of living for people; no equivalent that gives to the people individually the right to ownership and employment, because under that initiative and drive it reaches far beyond any kind of governmental scheme yet devised, whether it is approached by governmental incentive or governmental coercion, or a combination of both.

It has been under that decentralization of production that decisions can be made in a hundred canning plants, in a million enterprises in this country, and carried out to such a large measure without waiting to be told anything by government.

What has it meant in this country? Do you realize that our United States of America now has within its border about one-sixteenth of the world's population? Our 145,000,000 people, sons and daughters of every nation in the world, constitute about one-sixteenth of the over 2,000,000,000 people that live in the world. But this one-sixteenth of the world's population has reached the point where they are producing almost one-third of all the world's goods and services. Think of it.

Almost one-third of everything that is manufactured and raised and mined and produced and built in the whole world occurs in the United States of America. Now then, in spite of these tremendous facts, there has been this questioning, this uncertainty in late years about an economic system, and what I urge upon you this morning is that we realize what this challenge means, and what its import is to the future freedom of man, and that means, of course, in the conduct of the economic freedom of our country we need a high standard of business statesmanship.

We need to seek the boundaries between the rights of all, and in the approach and in the advance in each particular enterprise we must seek constantly to think of the whole broad development of the economic system and of the dividends that are received by the consumers, by the people as a whole.

Democracies Make Progress

Notwithstanding some of these dark developments on the world scene, I have great confidence and optimism in the future, because you can sense all over the world the rising determination of men to be free. During this very year I believe you will see economic unrest, possibly even reaching to the stage of rioting in the areas like Poland and Czechoslovakia, and the Ukraine and Eastern Germany. Why? Because these people have been told that under their rigid economic control, under their loss of economic freedom, they were going to be receiving dividends in consumer goods which they are not receiving.

For a certain period of time the propaganda approach—the looking forward to the day ahead—will keep them from being too restive, but as the months go by and the years go by, in those areas I believe will develop either the very extreme cruelty and liquidation that was experienced in Russia, or a new pressure for economic freedom will take place.

If we are right in the great philosophy of this country, if we are right that man was meant to be free, if these ringing words from the founding fathers about inalienable rights endowed by a Creator are correct, then mankind everywhere has that determination, that goal, that objective, to increase his freedom. If we depend upon that to develop the policy of this country on maintaining economic freedom, it means this great system of people's capitalism, with broad ownership, with open competition, with the developments and advances in the real productivity as the means by which people raise their standards of living, then there is reason for optimism for the future.

If we are timid about the fundamentals of the economic freedom, and the other freedoms in America, if we do not stand up for them on the world scene, if we permit the theorists on the socialist side, without any evidence in history at all of accomplishment, of production to the advantage of people, to dim or to confuse the policies of our country, then there would be grounds for fear.

So what I urge upon you this morning is this. We should not be dogmatic, we should not be dictatorial, we need constantly to evaluate facts around the world; but on the basis of what we can see, we can observe that Belgium, Holland, Denmark and Norway are the four countries that have made the best recovery since the war in Europe of those occupied during the war, and they are the four countries that do the most toward economic freedom, along with the other liberties.

Based on the great experience of this country and the whole economic history of the world, we want to retain real economic freedom in America, which appears to be an inseparable companion of the other liberties of men. We want to urge it upon the peoples of the rest of the world, and in a friendly way seek to advance the true welfare of man as the great outlook for America, and the best service of its own people within its own borders.

Symposium on Merchandising Of Canned Foods

OPENING STATEMENT OF SYMPOSIUM MODERATOR

By Harold Patterson,
Lyndonville Canning Co.,
Lyndonville, N. Y.

It is a significant fact that on the whole, American merchandising is the most effective in the world. With only 6 percent of the world's population, and an even smaller percentage of the world's labor supply, the United States produces *and markets* more than one-third of the world's goods. The great force of this remarkable achievement is often not fully appreciated. It is a tribute not only to production genius, but also to merchandising genius, and last but not least, to the integrity of American business.

The food industry plays a large part in this. A marketing pictograph in *Sales Management* portrayed that of the consumer's expenditure dollar—well over a fourth is expended on the stomach.

In this Symposium on "The Merchandising of Canned Foods", we shall, through representatives of eight national organizations of our industry, tap the thousands of centers of initia-

HAROLD F. PATTERSON
Moderator

tive that comprise these eight great national food associations. The advantages accruing from a formal interchange of views by these spokesmen are immediately apparent, for the food industry is highly susceptible to change. One reason that 1949 is an opportune time to discuss "The Merchandising of Canned Food", is that the last 15 years have been unduly influenced by special conditions—the depression of the thirties and the war. Still another reason why a review is timely is that the rapid growth of technological research has influenced in considerable measure the nature of merchandising. A third reason is that, since production and employment are subject to fluctuation, business is subject to expansion and contraction. This brings us to the common theme of this Symposium; namely, *The calculated belief that intelligent and improved merchandising can cushion whatever economic shocks may be sustained by the food industry.*

REPRESENTING THE NATIONAL-AMERICAN WHOLESALE GROCERS' ASSOCIATION

Arthur Ehrenfeld,
Francis H. Leggett & Co.,
New York City

When Mr. Patterson wrote me outlining the purpose of this Symposium, he suggested that I might wish to emphasize the merchandising picture from the point of view of the organization I represent—the National-American Wholesale Grocers' Association. I'm certainly glad to be afforded this opportunity because I frankly feel that there is considerable room for improvement in the merchandising picture as it concerns packers and distributors if we are to achieve any degree of success in maintaining a demand commensurate with today's supply factor.

As private label distributors, we wholesale grocers are concerned with all phases of merchandising—both buying *and* selling. From a selling standpoint, our future success will be reflected in the merchandising assistance we give to the independent retail grocer. However, merchandising from a *buying* standpoint presents us with entirely different problems—problems over which we naturally have no control. And it is on this latter phase of merchandising that I should like now to speak.

There are a number of specific recommendations I am about to make, recommendations which I offer as a vehicle to improve the merchandising relationship between private label packers and private label distributors. However, let me first give you the basis for my thinking.

After World War I, we experienced a rise in price levels of 170 percent above the prewar levels. There could be only one consequence of this pyramiding trend when inflationary forces were checked—and that was the severe decline in 1920-1921 and its demoralizing effect on business.

During World War II, we saw another sharp rise from prewar levels and we would have suffered the same consequence but for the existence of two factors:

1. Export demand fed by the governmental subsidy popularly known as the Marshall Plan.

2. (And most important), Government support of farm commodities.

Surely a decline in the price of farm products would have come upon us sharply if it had not been for these sustaining factors. Despite the influence of the Marshall Plan and farm support, there has been a marked decline in grains—wheat, corn and oats. Corn is an important element in the price of livestock on the hoof. I think it is safe to predict that the price trend on beef and pork will be downward. With the revival of all European agricultural production, European crops are obviously going to be larger—which points to a lesser demand and consequently lower prices for American farm products. In the light of all this, there would appear to be an almost inevitable tendency for prices of farm products to move downward. In recognition of this trend, I would urge packers, in contracting for crops for canned foods, to introduce greater flexibility into the price to be paid to the grower, and possibly defer contracting for raw materials until there is a better understanding of the economic conditions existing generally when packs are to be sold. A downward trend in prices on farm products will undoubtedly set economic forces to work to bolster consumers' buying resistance to high prices on canned foods. Therefore, regardless of the obstacles involved, raw materials for canned foods should be purchased during the coming season on a lower basis than last year. If this is not accomplished and should a strong buyers' resistance movement set in, holders of large inventories obviously will encounter severe hardships.

Need to Carry Packs

The most important feature of canned food buying today is that the canners must realize that distributors cannot absorb their entire packs at one time as they did during the war; if they haven't already done so, canners must recognize that they will have to be prepared to carry these packs as they did during normal periods when canned foods were merchandised during the entire distributing season.

As private label distributors, we realize that the independent canner has his headaches. In many instances, financing and warehousing, due to the excessively high cost of materials, supplies and labor, have strained the canner's working capital. It should be an important function of the distributor to assist in this financing by furnishing the canner with labels and shipping instructions in advance of the season, thus permitting labeling right off the line and shipping by trucks or cars. But savings achieved because of this assistance should be passed on more generously to the distributor so that he in turn can pass some on to the retail grocer.

Many packers this year, especially in California and in some other States, did establish a differential for prompt shipment, but more packers in other sections of the country should also offer a similar inducement. By doing this they could put larger stocks in the hands of the distributor, placing the pressure on *him* to exert his maximum sales efforts to move the merchandise he has accumulated. In the meantime, private label distributors have adopted the turnover method of purchasing on many items to eliminate possible losses in the event of decline. Unfortunately, however, this method results in the loss of business because they frequently run out of goods due to the smaller stocks carried. Any program along these lines that will instill confidence in the distributor, so that he feels he is purchasing on the most favorable basis, will aid the free flow of merchandise.

Guarantees Against Loss

There is another phase of merchandising in relationship to packers and distributors, which I know would insure greater confidence on the part of distributors in accumulating an inventory. Many of the nationally advertised brands have, to some extent, already done something about it. In the case of one prominent canner, for example, merchandise (with the exception of fish, pineapple and citrus products) is guaranteed against decline 35 days after arrival by steamer, and 30 days when by rail. Isn't it reasonable to assume that this guarantee has been extended because it is considered at least *mutually* beneficial? Contracts are made for shipment prior to December 15th and in some instances to February 15th, permitting customers to order out such merchandise as they require in the interim. Thus their customers are virtually guaranteed against taking any loss.

The private label distributor does not enjoy any such protection, except in a few rare instances. You are also all familiar with the price guarantee initiated by the Florida citrus packers this season, whereby citrus products are guaranteed against decline for a specified period after the merchandise has been received. If private label packers would offer some form of price protection, mutually

satisfactory, so that a cooperating distributor, willing to place a substantial order from new pack, would not be penalized in the event of a market decline, I am confident that those packers would enjoy considerably more business from those of their customers who are now rigidly adhering to a strict turnover policy of purchasing.

Many of my canner friends in the audience might say that this idea is impracticable, but at least I'm planting the seed of an idea, remembering that great oaks from little acorns grow.

We have had instances this season where the prices of private label packers were as high, or nearly as high, as advertised brands—this is a carryover from the days of OPA. With constantly growing advertising appropriations promoting nationally advertised brands and successfully increasing their volume of sales, it becomes more and more necessary that a sufficient differential be established between the prices of nationally advertised and private label packers. This would furnish the private label distributor with a margin that would assist him in competing with the nationally advertised brands by advertising his own label, and by offering merchandise to the independent retailer on a more favorable basis. After all, the private label packers are not required to appropriate heavy sums for advertising, but depend to a great extent on private label distributors to promote the largest possible acceptance of the merchandise that they pack.

Growing Demand for Quality

If we are to *merchandise* our goods *intelligently* we must bear in mind that in recent years there has been a constantly growing demand for better quality merchandise; there must be no up-grading, no cutting corners in quality today. At the same time, however, we must all—grower, packer, distributor and retailer—do everything that we possibly can to overcome buyers' resistance to prices by establishing prices which would fall within their budgetary capacity.

After all, Mrs. Consumer is the final authority as to whether retail prices are within her means, and regardless of what the grower feels his return should be, the ultimate sale of the merchandise he grows depends on her. Whether we like it or not, she isn't concerned with what the grower pays labor, what the packer pays the grower, nor in the distributor's and retailer's margin of profit. If she is an efficient housewife, she is principally interested in living within her means.

During the past season there has been, fortunately in the minority, some pricing not on cost, plus reasonable profit, but on all the market would bear. For the coming season those processors, I hope, will correct their thinking, or have they in mind the man with the Midas touch, where everything figuratively turned to gold for him? One day a friend asked him why he kept accumulating so much wealth since he couldn't take it with him. The answer was "Well, if I can't take it with me, I won't go!"

We have ahead of us a tremendous potential market—with the possibility of selling more canned foods than ever before. Our population has increased from 130 million to 145 million in the past ten years. In addition to this, *real* wages—that is the wage-earner's buying power in terms of higher price levels—have increased almost 40 percent in nine years. If we are to reap the full benefits of this vast market, however, we've got to do a great deal of cooperative thinking on what I understand to be the common theme of this Symposium—That *intelligent and improved merchandising can cushion whatever economic shocks may be sustained by the food industry.*

REPRESENTING THE NATIONAL ASSOCIATION OF FOOD CHAINS

Forrest L. Fraser,
The Kroger Company,
Cincinnati, Ohio

I am participating in your discussions this morning as the representative of the National Association of Food Chains.

So that the viewpoint of the members as a whole can be presented, questionnaires were sent to many of these members and my remarks, to a great degree, are based upon their answers to these questionnaires.

My subject this morning is "Merchandising of Canned Food from the Viewpoint of Chain Stores".

One of the most important phases of merchandising is that of thorough planning. In order to plan, it is necessary that we determine the various factors which will directly affect the methods and procedures we will use.

First, we must realize that the party is over. We have had approximately seven or eight years of easy sailing, selling everything we could buy and everything we could process. Today, we are in a buyer's market and are faced with a changing economic picture for the coming year. Our merchandising plans must be formed to meet these possible changes and to capitalize on them where possible.

We are faced with many opportunities for doing an alert, aggressive merchandising job in the coming year despite possible changes.

During the last ten years tremendous changes have taken place in food retailing. Our per store volume has tremendously increased, providing greater tonnage possibilities and merchandising opportunities. We have changed from service to self-service. This means that there is no sales person to give personal push to any given products and the customer buys what she wants. Therefore, labels are the main salesmen we have in our stores in regard to your product and so they become increasingly important. We have progressed from small stores to large, roomy, beautifully equipped retail establishments. This means we are displaying more products, more varieties, with the result that the canned foods on display are faced with a battle for "The Almighty Food Dollar".

It is our feeling that the canning industry in certain phases of its operation has not kept pace with the change and improvement in the retailing of its products.

We are servicing larger trade areas than ever before. In many cases it is hard to estimate just how large our trade area is. Our traffic hinges a great deal upon the uniformity and quality of our products. Our advertising and display methods are our salesmen.

All of these changes bring with them a demand for better merchandising technique, better merchandising thinking, and better merchandising planning in order that we may operate to maintain maximum volume and profit in our everyday business. It is evident that we have more possibilities for volume than in the past and our plans must be laid to take advantage of these opportunities.

Canned Foods A "Traffic Item"

An integral part of our merchandising operation and planning is given over to canned foods. In answer to the questions, it is unanimously agreed that canned foods, properly presented and advertised, are a "traffic" item for us. As clear proof, the members of the NAFC are devoting from 16 percent to 35 percent of their tremendous newspaper lineage for the purpose of publicizing canned foods. It also is unanimously agreed that there is room for improvement and that additional volume can be had. The question, therefore, arises: "How can we improve this business?"

The first step is to establish the very important fact—this is a "team" job, that *we* cannot do it alone, and *you* cannot do it alone. We are going to offer suggestions to you in order

that you may help us work out and develop our merchandising planning. One of the most significant developments in present-day chain store merchandising is our desire and intent to set up a planned merchandising operation to cover 12 months of the year. It is our belief that the canned foods business is an every-day, every-month business and that in order to capitalize to the fullest degree, we must have supplies throughout the complete 12 months. We, therefore, invite you and urge you to work out with us ways and means to keep us supplied throughout the complete 12 months.

Labels also are a great concern to us. As our stores have increased in size and the variety of our products has increased, much more space has been given to products which heretofore have been confined. Very frankly, many of these products are better packaged and better labeled than canned foods and do a better selling job.

The most frequent suggestion from NAFC members is a better labeling job—clear art work, more attractive labels, spots on the labels for pricing. Again, this is a "team" job and we are perfectly willing to sit down and discuss with you any labeling problems you may have.

We suggest that the canning industry take into serious consideration a program designed to standardize the size of canned foods containers and confine to present sizes as we are fearful of a reversal to the hodgepodge of sizes we were forced to carry before the war. Too many sizes make it extremely difficult to display, increase our inventories, and hamper any concerted merchandising program.

Uniformity in Quality

Supplies are more plentiful. We are forced to be more choosy, and uniformity of quality and of product will be a distinct factor in our merchandising results. We suggest that you pay particular attention to uniformity of maturity—flavor, absence of defects, and color. Uniformity in quality of product, we believe, is absolutely essential, and it is the responsibility of every packer, regardless of size, to produce as uniform a pack of product as possible in the grade he is packing.

Packing to the upper half of the grade is desirable so that with all these things we can have uniform products which our customer will recognize and buy repeatedly; products on which we can base a planned merchandising program.

Proper casing and loading with an eye to eliminating loss is very important to us. As you all know, we work on a very close margin and dented and battered cans do not sell. We believe that much can be done through research in an attempt to improve this situation. Again, we impress upon you that we are at all times open to discussion of these problems with you in order to accomplish maximum sales.

Better Use of Advertising

Industry advertising can be a tremendous help to us, and we suggest that serious thought be given to coordinating this effort with retail needs. we welcome well-thought-out publicity plans, and we suggest that they be pointed to highlight new packs—to stress dollar value and nutritional value in comparison with fresh product. We suggest better timing of your ads to coincide with the seasonal demand of your retail outlets. We welcome and can use advertising pointed towards specific uses for canned products—tie-ins with menus and with related products. Many of your programs up to this point have included many of these things and we congratulate you on a very good start and definitely recommend that you continue to give us this kind of help.

All of these publicity aids can be—and will be—coordinated into our own merchandising programs. We want to do a larger canned foods volume and are doing our level best to accomplish this purpose by consistent advertising and consistent display and forward planning.

In closing, we invite your cooperation—we invite your discussion on some of these viewpoints we have made today in the very few minutes allotted to us. We repeat—this is a "team" job—*you* process the product and move it to our stores; *we* display it and move it to the customer!

The clearer understanding you have of *our* needs and *we* have of *your* problems will surely result in a more coordinated effort, better merchandising planning and technique, so that we should be able to hold and improve our present volume and profit.

REPRESENTING THE NATIONAL FOOD BROKERS ASSN.

John P. Houck,
M. W. Houck & Bro.,
New York City

I have been invited by your venerable Association to appear here as the representative of the National Food Brokers Association.

As you already know, the subject of this Symposium is "Merchandising" and I have been asked to address you "from the point of view of the Association I represent." It is important that this be kept in mind, as merchandising has many ramifications and applications at various levels, the detailed recitation of which would likely lull you to sleep in your respective chairs.

I will, therefore, try to confine my remarks to the broker's viewpoint of merchandising at the *canners'* level, even though I feel a bit as though I were "carrying coals to Newcastle."

As you will notice, I have avoided the use of statistics, not only because they are dry and boring, but they always put me in mind of the man who drowned crossing a river which natives told him *averaged* only two feet deep.

As I embark upon this subject, I feel constrained to say first that I find no magic formula, nor any open sesame that might be construed as a rule for all, but there are some underlying principles that cannot be ignored without fatal results.

Merchandising is not an element—it's a group of inter-dependent actions.

If one of the group is neglected, your chances of successful merchandising dwindle.

To have any hope of accomplishing a *finished* job of merchandising, you must know *what* you want to do, prepare a plan, set a course, and hold to it.

Merchandising must necessarily be an endurance test: It isn't a sprint—it's a marathon, and victory goes to the manufacturer who synchronizes his pace to the ground to be covered. Sprints and mushroom growth are dangerous and likely to result in severe setbacks.

One leading canner reviewed his firm's growth since 1910 and discovered that it actually grew faster during depressions than in times of general prosperity. The answer is readily obtained in their preparation for these periods and contrariwise, the lack of it by their competitors.

Merchandising might seem to be a complicated thing and it is, if you involve yourself in its many facets. Basically, it is simple.

It starts with *quality*, but it does not end there, for the creation of a quality product in itself affords no assurance of marketing success.

Complete merchandising success depends upon five major things: (1) Quality, (2) Pricing, (3) Packaging, (4) Distribution, and (5) Promotion. These will be considered in the order presented.

Quality is not an accident—it's the result of research and carefully calculated design. Direct your quality-appeal to the consumer; cater to her—not to the broker or distributor. The opinion of these necessary purveyors may be of assistance, but the person you want to reach is the one who

weekly actually *eats* your products. Nonetheless, it is important that you establish a fair and sound policy for dealing with these people who carry your goods through to the consumer that should be equitable to all.

What you really want to do is manufacture good customers while you manufacture quality goods. One complements the other and each is equally essential. Strive, however, to create a backlog of consumer preference in excess of your contemplated production.

Gauge Production

Find out what the housewife wants, or is looking for, through modern research. Bend your every effort to produce a quality that is not just as good, but better. Then, bear down *hard* to make that quality constant and dependable. Make that word your slogan—your lode-star. Pound it into your staff and paste it in the minds of the consumer so thoroughly that it will come off on their hatbands like a decalcomania.

Gauge your production to fit the requirements of the trade insofar as nature will permit. This is a difficult problem, but it can be mastered at least in part.

A recent survey cited by the Food Institute divulged that only 17.6 percent of women patronize a store primarily because prices are *lower*, while an exactly equal percentage said they did patronize a store mainly because they could obtain the qualities and *brands* they were looking for. This merely confirms an opinion I have held for a long while.

Do not ever let any distributor talk you into packing your products *down* to a price—that's the short way of folding up your tent and joining Omar.

This does not mean that you can over-price your wares and still maintain shelf velocity—that would be too millennial.

Be content with a reasonable profit —never price your goods any higher than is necessary to pay your costs and allow for consistent expansion of your facilities.

Insofar as it is within your power, an orderly constant price structure should be maintained, thus affording your distributors confidence and assurance that market losses will not be shouldered on to them.

Sometimes this calls for reasonable guarantees, especially when the canner is selling his own proprietary brand.

A good product deserves an attractive label—would you expect to put a pretty girl across in a "Mother-Hubbard"? Maybe you could do it by sheer superiority, but why put her to the test? Give the girl at least an even break and buy her a pretty pink dress to go to the ball.

Without going any further than the principles my company represents, I have seen marked improvement in sales brought about solely by giving a product an eye-catching wrapper that bespeaks the quality to be found inside.

"Better Labels" Cited

We brokers feel that your Association's fostering of the film "Better Labels" deserves the greatest commendation as a forward step in the direction of making educational material available to any progressive manufacturer or distributor who will take the trouble to avail himself of it.

Distribution involves a sound sales-policy, a dynamic sales force and obtaining the cooperation of the wholesale and retail distributors.

A sound sales-policy requires that you accept responsibility for the goods you produce, until they have reached the consumer. The fact that your invoice has been paid does not release you from your trust—that is a mistake that is all too frequently made. Whether the can wears your label, or that of a distributor, it is still your baby.

Broad Distribution

Broad distribution is a valuable asset, as this spreads your risk and avoids the pitfall of getting too many eggs in one basket. This point was accentuated by Harold O. Smith, vice president of the United States Wholesale Grocers Association, in his address before the Florida Canners Association in October from which I quote:

"Doesn't it seem shortsighted for any packer to give concessions to a few big buyers, therefore concentrating your sales? Isn't this practice of putting all your eggs in one basket placing you in a very vulnerable position?"

I quote further from Mr. Smith's paper:

"You should consult often with your food brokers who are in daily contact with our wholesale grocers and let them advise you on the sales policy to follow in order to get your maximum volume out of each area."

The sales force that you employ will depend on the trade you are trying to reach, but where national distribution is desired, hardly one important canner has ever succeeded in obtaining it without the employment of the food broker. They afford a ready-made national sales organization at a cost far below anything attainable by other methods and, remember this, representation in each city costs you nothing, unless sales are effected.

ARTHUR EHRENFELD
Nat'l-American Wholesale Grocers

CHARLES S. RAGLAND
U. S. Wholesale Grocers Assn.

FORREST L. FRASER
Nat'l Assn. of Food Chains

JOHN P. HOUCK
Nat'l Food Brokers Assn.

Occasionally, canners have become very critical of brokers in general and have openly condemned this method of selling. I do not question that criticism is sometimes justified, but I submit that it is no more reasonable to expect *all* brokers to be flawless, than to seek this same impeccability in any other field.

My 30 years as a broker have brought me into contact with a great many manufacturers, and I have learned that the broker will function just about as well as his principal enables him to do. You must give him the tools with which to work. You must grease the machinery with the necessary information about your products, samples, sales arguments and facts about competing articles. Above all, you must implant in them the feeling that they are an integral part of your organization.

If you do not feel the complete confidence in your broker necessary to a close association, then you would be wise to form a new connection, as without mutual respect and trust, your broker will never function to the best of his ability, nor secure the results that you desire.

Your broker is not one whit different than a salesman on your payroll. Educate him to represent you in a fitting manner. It will pay you dividends as long as you employ him.

Results of Brokers' Effort

Do not let your broker down. Make him your exclusive representative and expect him to afford you exclusive representation on your particular lines. Trading in his market behind his back will undermine him, and, eventually, nullify his value to you. He is a member of your staff; surely you would not consider docking a salesman's salary because a customer walked in your office and placed a large order. It is more probable than not that you would never have initially had an opportunity to sell that customer, if it were not for the broker.

We have now treated with production, pricing, packaging, selling and distribution, which leaves us with a quality product lying on the shelves of the retailer looking for a home.

The number of homes these cans find will depend almost entirely on how many messages you send to the consumer that they are there and how good they are.

The day is long past when you can rely on word of mouth to move your goods to the consumer week in and week out. If there is one thing that the perspective a broker enjoys has divulged to him in recent years, it is that even the best products cannot be put across without promotion, and promotion means advertising in its various forms. It would be hard for one to conceive of a successful merchandising program that omitted some form of advertising, either direct consumer, or cooperative, and the experience of a great many of our largest manufacturers proves fairly conclusively that a combination of the two produces best results.

In closing, I would like to remind you again that merchandising is a combination of efforts and only through close co-ordination can you make a merchandising campaign click.

It has been an honor and a pleasure to speak to you today and, in the name of my Association, I thank you for the privilege.

REPRESENTING THE NATIONAL ASSOCIATION OF RETAIL GROCERS

W. T. Dahl,
Dahl's Food Markets,
Des Moines, Iowa

Speaking today as a representative of the National Association of Retail Grocers of the United States, I appreciate greatly the invitation of the National Canners Association to meet with you and the representatives of the food distributors of all groups. There is need for us to meet and to discuss the problems common to all levels of the industry and to develop, thereby, the techniques, policies and methods which will enable our great business—the basic service to a hungry world—to continue the astonishing accomplishments of recent years.

As a food retailer, I feel a bit strange in this company. Until recently the retailer has been regarded rather as the two-spot in the business deck in which the processor was the King (with the banker as the Ace, of course—at least for three months of the year), the brokers and wholesalers corresponding to the Queen and Jack and the consumer represented by the case—cards from the Ten down to the Trey. Gentlemen, the scene has changed, and retailing has arrived at a position of prime importance in the industry. Only a few brief years ago less than a score of retailers in the entire country were attaining a volume of a quarter of a million dollars annually in one outlet.

Importance of Retailing

The importance of the retail phase of distribution is acknowledged by the recognition accorded to retailers—not to me personally—by my presence here today. This recognition is evidence of healthy progress—of open-minded acceptance of changed conditions in the industry. For it is a proven fact that:

The grower may supply a basic commodity of finest quality—

The processor may assure its presentation to the public in perfect condition—

The brokers and wholesalers may develop distribution to such a point of efficiency that prompt and frequent supply is a matter of course—

Every type of publicity may be employed to inform consumers of the merit of a commodity—

With all of these things done—and done well—there will still remain to be performed the most important function of all: Delivering the finished product to the ultimate consumer at the time and place, and in the quantity desired, attractively presented and reasonably priced.

Because service to the consumer is a highly complicated business, involving a great deal more than merely handing over a package with a smile and a courteous word, the retailer in the modern world has need of the best advice he can obtain along many lines, such as the layout of his store, equipment, the best method of operation, proper inventory, personnel training and other such phases of his business. This is where the National Association of Retail Grocers fulfills its vital role in assisting him to be progressive and successful. Its services have been constantly expanding to keep pace with a business that has advanced almost centuries in the space of a few years.

Consumer Demand Important

The best quality product of the most scrupulous and efficient processor will not reach the hands of consumers in any volume if, in the retail store, it is necessary for consumers to have a flashlight to find it and a rake to get it.

Consumer *demand* is important; every retailer realizes that. But if volume acceptance is to be accomplished, if the great stimulant of impulse buying is to be permitted to function, then shelf position, display, recommendation, promotion by advertising and other merchandising practices, and sensible pricing must be applied at the point of consumer contact.

In the food industry, as in most others, a "seller's market" has prevailed during recent years. Foremost in the minds of every distributor at this time is the question: What methods should be adopted to meet conditions when a considerable proportion of consumers are forced to reduce their purchases and there is less pressure of demand for the commodities sold in food stores?

Having begun the great adventure of operating my own business during the early years of the "terrible thirties," I have had personal experience with a buyers' market; even of a "no-buyers'" market. Can one do better

than to recall and repeat that industry, energy, ingenuity, alertness and thrift—the ancient but never outworn principles on which all true and lasting success is based—will be required to meet the rigid tests which a buyers' market presents.

Changed Business Methods

Many in this room will recall that the modern type of retail food merchandising was begun during the depth of the Depression of the 1930's and showed its greatest development during that period. It has been said, "Necessity is the mother of invention." Most of us are little inclined to change our methods when business is good and everything is going well. When successful operation is less easy and emergencies must be met, those who study their operations closely and sincerely, and who have the courage to make changes, usually are able to devise and adopt the procedure which the situation requires. I have great faith in the ability of the forward-looking food distributors of America to face with confidence, and if not too seriously handicapped by governmental regulations, to work out the means by which they can continue to supply the consumers of this country as they are now doing with more food of better quality, in wider variety, and at more relatively reasonable costs, all factors considered, than any people have ever had before in the history of the world.

With the cooperation of processors, brokers and wholesalers, there is no question but that the food industry can maintain and improve its present high standard of service to American consumers and to earn a satisfactory return while so doing even if more difficult general conditions should develop.

The tremendous increase in consumer acceptance and use of canned foods during recent years is, of course, most gratifying to food retailers, almost as much so as it is to canners. If my own operation is representative of the average "one-stop" food store, then canned foods account for approximately 11 percent of the total sales of the larger retail outlets. Canned foods are, therefore, one of the most important of the commodity groups in the food retailers' stores. They deserve and must have the support and attention of the retail merchant if they are to pay their fair share of the cost of operation and return a satisfactory profit.

"Fair Profit"

There has been much discussion of the question "What is a fair and adequate gross profit on canned foods?" There are many points that must be considered carefully to determine a proper answer to this question—too many for the time allowed for this discussion. Two principal phases of the subject can be touched on briefly, however.

First: All varieties, types and grades of canned foods should not, and cannot, be expected to return the same gross profit. Each variety, type and size should be priced individually and the price proper for each should be determined on the basis of investment, turnover and all other appropriate considerations.

Second: In arriving at a proper price for canned foods, it must be remembered that these commodities normally occupy the most valuable space in most food stores. In addition, if canned foods are to be stocked and displayed so they will move in volume, a far greater proportion of the total shelf and display space is required than the percentage of total sales which they represent.

If processors of canned foods will survey modern retail stores and observe the space and position devoted to their products, in substantially all cases they will find they have reason to be gratified by the support given to those lines.

Retailers are properly appreciative of the efforts which have been made by the canners to improve their products, containers and labels; their store display and informative materials, recipes, and menu suggestions, their sales stimulants, including consumer advertising of all types.

All of these have been helpful to the efforts of food retailers to provide a complete food service to their consumer customers and to reduce their part of the costs of distribution.

Again speaking for food retailers generally, I bespeak continued cooperation and further effort by processors to improve their practices in some respects, not only to be helpful to their customers, the distributors, but to serve consumers better and thereby to increase materially the use of canned foods.

Specifically, the following suggestions are made for the consideration of the canners:

1. Quality should be maintained at all times and there should be no grading down or debasing of labels. If products of the quality usually packed under a certain label cannot be obtained, then that label should never be used for the lower quality product.

2. Processors should continue and intensify their valuable publicity programs to inform consumers of the quality, convenience and reasonable cost of their products. In all such publicity I believe that there should be included a reminder that food processors and distributors are the servants and salesmen of the producers—of the millions of farmers of this great country—and that the major part of the cost of foods and allied products is returned to the basic producers to

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HUGH J. DAVERN
Super Market Institute

W. T. DAHL
Nat'l Assn. of Retail Grocers

PAUL S. WILLIS
Grocery Manufacturers of America

JOHN L. BAXTER
National Canners Assn.

increase their buying power and their prosperity.

3. Appropriate "point-of-sale" material should continue to be furnished to distributors and such material should be sent direct to retailers. Such material should include suggested copy, with mats, for retailers' own local advertising.

4. Processors should refrain from any attempts to cause retailers to price canned foods below reasonable levels.

5. Each individual processor, as such, should adjust and limit his own total pack of each important commodity in accordance with expected carry-over and anticipated crops to avoid excessive supplies with the consequent demoralization of prices, which is certain to follow.

6. Promotion plans, special prices or "deals" should, of course, be offered on equal terms to all distributors. Prices and terms offered should be such as can be acceptable to a reasonable proportion of all distributors; not based on quantities so great that only a few can take advantage of the best terms offered. NARGUS is working, and, we feel, achieving success in its efforts to gain recognition by both industry and Government of the fact that small operators must be permitted to operate competitively with the larger establishments. We are opposed to any quantity differential which represents any more than the actual saving to the manufacturer because of the size of the order. We will also continue to work with both industry and Government to obtain a change in floor stock protection policies of certain manufacturers. Actually, the correction of discriminatory practices will create a better and more workable understanding between supplier and retailer, and build better business for both. The supplier, of course, can prosper only so long as his customers prosper. Since the major portion of his goods are sold to the public by independent retailers, it is quite obviously to his advantage to do all he can to see that they are able to be completely competitive.

7. Proper provision should be made so that all types of containers can be price-marked by stamping—preferably on the top of the can. Spaces designed for that purpose should be free from printing of any kind and all containers should be clean and sightly. Processors who pack in oil should remove all oil from the outside of the containers, as price marks applied with a rubber stamp will not show on an oily surface.

8. The number of can sizes and shapes should be held to the absolute minimum necessary for the convenience of consumers, and there should be sufficient difference in the sizes to be readily apparent to consumers. Minor variations in sizes cause consumers to suspect and distrust the retail merchant who sells the standard size at a fair price while a competitor can quote a lower price on a size which *is not, but appears* to be equal.

9. Processors and wholesalers should perform the function for which they exist: To maintain stocks adequate to supply retailers with commodities when and as needed. Retail stores must of necessity be situated in heavy traffic locations. Therefore, their occupancy costs are high, which precludes large storage space. It should not be made necessary for retailers to carry heavy reserve stocks in order to have the variety and quantity required to serve their trade.

May I again express my appreciation to food processors, brokers and wholesalers for the manner in which they perform their respective parts of our mutual obligation of service to the consumers of America. As we all continue to strive together for increased efficiency in our operations, we will make even greater gains than those of the past 25 years—which, I submit, have been greater than were made in all the previous years in the recorded history of the food industry.

REPRESENTING THE SUPER MARKET INSTITUTE

Hugh J. Davern,
The Grand Union Company,
New York City

When I was asked to speak at this meeting as the representative of Super Market Institute, I accepted because it gave me an opportunity to tell you some of the things we super market operators have had on our minds for a long time. Even though you may disagree with some of the things I may say, I am counting on you not to do any heckling. We distributors and you packers have many problems in common. These may be solved better if we bring them out in the open for a frank discussion. I am going to talk about just three economic shocks which we may have to face: First, decreased consumer demand for foods; second, falling prices; and third, inventory losses.

If we hope to cushion these economic shocks by improved merchandise techniques, then these techniques must be designed to accomplish specific objectives. In the first place, they must increase the consumer demand for our products above the present level, avoid precipitous and disastrous price declines, and, lastly, keep our inventory investment as low as good business permits.

Now, let's take up this subject of consumer demand. The customer votes every day; it is important to have her elect your merchandise. We can find out what she wants by studying the results of consumer research. While some types of polls, particularly recent ones, have been inaccurate and misleading, to say the least, research can be used to good advantage if the information is obtained and interpreted correctly. We super market operators are willing to cooperate with your research committees in obtaining more direct information from the consumer at the point of sale.

In developing an increased demand for canned foods, the industry must combat the increased competition of other types of processed foods and of fresh fruits and vegetables. We are aware of the increased sales of frozen foods in the past few years. In the Grand Union stores where frozen food cases have been installed more than one year, the sales of frozen foods have shown an increase of 24 percent in 1948 over 1947. Our customers know that the retail price spread between frozen foods and canned foods is gradually narrowing, so increased competition from this source may be anticipated.

Country-wide advertising and publicity campaigns directed to the consumer by the American Meat Institute and the margarine industry have been successful in promoting the increased sale of fresh meats and margarine. A similar campaign in all types of advertising media will increase the demand for canned foods. Such an advertising campaign, using all types of media, should enlist the interest of dietitians, home economists and food editors of the thousands of newspapers, magazines, radio stations and associations throughout the country. You should plan to create a greater desire for canned foods. It should be on an industry-wide basis, promoting, for example, all canned corn or all canned peaches, not just one or two brands of any single packer. The advertising should be educational, pointing out the nutritive value of canned foods, their value in comparison with other foods, their adaptability to pantry storage and other information designed to stimulate the more extensive use of canned and bottled foods.

Packers and distributors have proven that if they work together, such campaigns are practical and successful. Good examples this past year are the promotions of peaches by the Cling Peach Advisory Board and of peas by the canning industry, with the cooperation of the distributors.

Next, in discussing the promotion for an increased demand for canned foods, let's take up the controversial and touchy but very important subject of descriptive or informative labels. In self-service stores all canned foods are within easy reach of the customer—to inspect, to consider, and to vote for, or blackball. In the past, the groceryman electioneered for the

brand he favored. He sold the brand he favored. Today, the label must sell the brand. From our experience in super markets, we know housewives are reading descriptive labels where available. A great deal of this interest has been aroused by the many active consumer groups throughout the country, as well as through adult educational courses in many towns, and particularly of importance and interest to both of us—through consumer education which is part of the work in homemaking classes in many of the high schools. In these courses, emphasis is placed on studying the types of labels used on canned foods. This latter 'teen-age group will soon be the judges of canned foods acceptance. Will the label on your product help sell your brand? Is your label information sufficient to interest the consumer or do you expect the customer to buy a "cat in the bag"?

It is difficult to claim in debate that a housewife is not entitled to a maximum of information to help her buy wisely, yet on many labels she continues to receive only a minimum of information. With self-service the vogue, it is more important than ever that the label takes the place of the service salesman. By giving the consumer adequate information on the label, you give her more confidence in the selection and purchase of canned foods. The result: Increased demand and greater sales of your product.

I would like to project one more thought with regard to descriptive or informative labels. Sooner or later the consumer will be able to go into a super market and will find a label on every can in the store which gives her enough information to buy that item intelligently. Consider for a moment how much better it would be for this industry if such a step is taken voluntarily rather than allowing restricted and grade labeling to be forced upon us by legislation. Incidentally, I saw this picture, "Better Labels," yesterday afternoon. I think it covers the subject very well and is well worth seeing.

I am going to touch very briefly on my second point, that of price declines. We realize that the extent of any future price declines will depend to a large degree on the government price support program. This is now in the laps of the gods in Washington. We do know however, that if demand falls, prices ultimately will follow, government price support or not. The law of supply and demand may have been hog-tied temporarily but when bumper crops are in the storage warehouses, buyers disappear; you might say, "they go back into the woodwork."

While on the subject of price declines, I want to mention also that any serious price wars that may develop among even a few packers or distributors, could be disastrous to the entire industry. Let's not lose our heads if the going begins to get rough —or we may really lose our heads!

The third method I suggest to cushion these shocks is low inventory investment. What good merchandising practices can we both adopt that will help maintain our stocks at a point where inventory depreciation in a period of falling prices will not be ruinous? Well, every super market operator I talked with is screaming about the number of can sizes—and all pleaded with me to present this problem to you.

The Super Market Merchandising Research Panel has just completed a survey on "Simplification of Container Sizes." This survey was made among over 100 members of the super market industry, representing operators of single markets to chain organizations of several hundred stores in every part of the United States as well as Canada.

The results of this survey showed that retailers, small and large, are overwhelmingly in favor of simplification of container sizes. Approximately 80 percent of the operators agreed that too many different container sizes affected their business, hampered inventory control, increased handling costs, and complicated merchandising programs; 90 percent said that too many container sizes confused the consumer in her shopping. Other difficulties brought to light were that too many container sizes overloaded selling space, confused pricing, increased inventory investment, complicated display, created advertising mix-ups, and so on and on. There is no doubt that the retailers are unanimous in feeling that there are too many container sizes. You may well be thinking at this point, "Well, what do they want"? And here is the answer: The survey showed that over 70 percent of the super market operators contacted felt that there should be no more than four container sizes on popular products such as vegetables, fruits, and juices. On fish products, 61 percent felt that two to four sizes would be sufficient. Even on such items as prepared foods, pickles and olives, it was thought that a maximum number of five sizes would be sufficient. It would seem that these very reliable figures are a firm basis upon which to make plans to reduce the number of container sizes.

Here is another very important point to the distributor in connection with this large number of container sizes. At the present construction cost of our new super markets, you can well imagine that display and storage space is at a premium. There are exceptions, of course, but there just is not enough room in the average-size super market to display all the merchandise now available even though they install such space saving multi-display units as Grand Union's Food-O-Mat.

Careful consideration should be given to each new item with reference to its over-all sales appeal and the nutritional and economic value to the consumer. We at Grand Union have a five-man merchandise committee which considers and approves (or disapproves) every new item as well as any item to be discontinued. We want to stock every new worthwhile item which you packers offer us. But we cannot take on everything, and it is a constant problem to decide which items to stock.

We, as distributors have a two-fold job: We must act as purchasing agent for the consumer, and must give her what she wants. We also must act as selling agent for the packer. Although we handle items that are competitive with canned foods, if you will increase customer acceptance, we as your selling agents will endeavor to do a better job for you. That, plus a more joyful spirit of cooperation rather than tacit acquiesence between you packers and us distributors can, I am certain, cushion any economic shocks that may be ahead of us.

REPRESENTING THE NATIONAL CANNERS ASSOCIATION

John L. Baxter,
H. C. Baxter & Bro.,
Brunswick, Me.

"Merchandising Canned Foods" is too big a piece of meat for me to bite off, so I'll just cut off a small piece and make a try at chewing it. My hunk will be seasonal, perishable canned foods. Even that is a bit tough for teeth that shows signs of loosening with age, so I'll devote most of my words of wisdom to the vegetables. In my probably biased, or even bilious opinion, they raise the toughest problem, although the production and marketing problems of canned fruits and canned fish are similar and only slightly less difficult.

Because the risks and uncertainties of agriculture are the root of production difficulties, let's first consider those for a bit.

Farming is a risky business, economically speaking. Generally a farmer can produce only a single crop of any one vegetable in any one year. He has to plan months in advance to grow it. Once committed to his program, he can't adjust it to changing conditions; so he suffers seriously from the risk of inflexibility. Since his production, or yield per acre—the fruit of his plans—depends to a very large extent upon the weather, uncertainty is an even greater hazard for him than inflexibility. The two together continually threaten his income. But worse, they plague his mind, so

that he has to become a philosopher, quit farming or go nuts.

The canner of seasonal perishable vegetables is a farmer plus, sort of an extension of a farmer. His risks of inflexibility and uncertainty are intensified. He is more heavily committed to everything than the farmer is, and his production and marketing risks extend over a longer period. He has bet more heavily on the future, and betting on the future is a mighty hazardous job. Consequently, when you see a seasonal, perishable canner you can be pretty sure that you are looking at either an experienced philosopher, a man who is about to change to some other business, or one who is ready for the "snake pit."

Planning Ahead

Now this little background dissertation is not presented to you as a plea for sympathy—although sympathy is always welcome, and thank you very much. Pleas for sympathy and incitements to self-pity aren't profitable, and this "survey of the situation," as the soldiers would call it, is worse than useless unless we use it constructively, to overcome existing difficulties and to make better plans for the future.

The horrid hazards, as I've explained or at least implied, are in two classes: Those having to do with production, and those with sales. There is pretty close connection between the two, of course. I'll skip the production category, even its connection with the sales difficulties, and devote myself to those last alone. Here goes:

For an industry so plagued with risks as the one I'm talking about, "selling" isn't an adequate way of distributing its products. Although mine may not be the dictionary definition, I use "selling" to mean just getting someone to buy your products, just getting rid of the goods. Trading has its place—a rather unpleasant one, in my opinion. Putting the baby in someone else's lap may temporarily be profitable sometimes, but that child isn't going to grow up to support its parents in their old age. So it is with the trading sort of selling and of buying for distribution. It isn't a particularly creditable way to make money, and it builds mighty little for the future. Canners and distributors alike should bear in mind that canned foods aren't really sold until they're eaten. And distributors should remember that goods not produced can't be sold.

This brings us to merchandising, by which I mean selling the goods all the way through. There's been a great deal of improvement in merchandising in the last 20 years, although there was a setback during the war because things sold too easily and everybody got lazy. They didn't have to merchandise them, just sell; so, being human, that's all they did. Many distributors, some canners and a few brokers are good merchandisers. Most of the good merchandising canners are those having a large line of products which they distribute under their own labels. Generally the buyer's-label canners are nothing but salesmen, and too often poor ones, at that. If that portion of the industry is to improve its future, or maybe even to survive, it has to learn merchandising and to practice it.

But canners can't do that without help, and that help must come from the broker and the distributor. The broker is the canner's agent—that's the legal definition anyway—and certainly if his canner principal goes out of business, the broker can't sell his goods. No sales, no brokerage to the broker—so there's a selfish motive to start with. Besides that, the wise broker considers the value of building business for the future. Finally, most brokers, like most people, get real satisfaction—even true happiness—from the feeling of doing a good job. All this, except for the part brokerage plays in profits since the passage of the Robinson-Patman Act, also applies to the distributor; so I hope you will concede that the follow-through which turns the slice of selling into the long straight drive of merchandising is a good thing, even an essential thing for canner, broker and distributor.

I've neither time in my allotted period, nor do I possess the knowledge to give you a lecture on how to go about accomplishing this purpose. Certainly the distributor should study supply and demand. He should confer with the canner for the establishment of prices, and I mean consumer prices, which will affect the demand properly in relationship to the supply. He, the broker and the canner should be as much concerned about prices that are too high as about those that are too low. We don't have to worry much about the distributor's attention to seeing that the canner price to him is too high—that's automatic—so that applies particularly to the canner; but the distributor, and the broker, should be temperate in seeking low prices—a panicky falling market hurts everybody but the consumer, and it usually does him more harm than good in the long run.

Merchandising Campaigns

We have seen excellent merchandising programs cooperatively carried out with the distributing trade by fresh vegetable, fruit and poultry producers. They have been very effective in moving burdensome surpluses. The canned pea campaign is the only nationwide one I call to mind on canned foods. It was and is a good job, but I'd guess that a comparatively small minority of the joint industries really put their backs into it. That sort of thing should be a regular policy of canner, broker and distributor. It should be studied, improved upon, made continuous and pressed hard or lightly, according to what conditions demand.

Good merchandising requires teamwork. That takes more intelligence, more planning, sometimes more effort all the way along. But teamwork produces results that are more than worth that extra effort and ones that are more satisfactory, not just in profits alone, but also in happiness. In fact, believe it or not, it is fun. Besides that, there's a whole lot to think about in that old admonition, "United we stand, divided we fall."

REPRESENTING U. S. WHOLESALE GROCERS ASSOCIATION

Charles S. Ragland,
C. B. Ragland Company,
Nashville, Tenn.

There are five food wholesalers in Nashville, any one of whom knows more about part of this subject than I do. It has been aptly stated "that the most ignorant man in the world is one who is ignorant and doesn't know it." One of the great Scotch prayers is "Lord, keep me alive as long as I live." There is no doubt as to my ignorance, although I sometimes feel a slight spark from the shoulders up. Until socialistic incentives arrive in this country, a true merchandiser will keep everlastingly alert to changing conditions and new methods of business. And the man was right who said of our subject today, "Anyone who essays to fly so high should first have his head examined."

Canned Foods Defined and Related in Importance: The canning industry, believe it or not, reached a 1946 high which was nearly double the 1939 level. For this reason, therefore, canned foods, although all important to the canner, are also of increasing importance to wholesaler, retailer and consumer. At least this increase in volume in the canning industry is of importance to all of us in distribution, *provided* we can accelerate our distribution enough to profitably absorb the increased volume offered us by the canning industry. To put that in plain English, you can it and we sell it, and your increased volume means nothing to us unless we increase our volume proportionately. It does no good for you to stay ahead of us; our job is to stay ahead of you,—hence our mutual concern, "Merchandising of Canned Foods." Nor must be forgotten the part that sanitary steel food containers played in the Allies' success in World Wars I and II, as it is a story of major significance.

The term "canned foods," to some people, means fruits and vegetables, juices, meats, milk, soups, fish, and chili products, and others like to include items packed in tin cans like shortening, condiments, syrups, molasses, baking powder, dog food, beverages, and many other items.

Under the limited definition sales will make up 6 percent of dollar volume in big markets compared to 10 percent in the smaller stores, and in the broad aspect canned foods make up as much as 15 percent in the big markets and 20 percent in the small. At the wholesale level, the experience for certain reasons is reversed and the big city wholesaler may run as high as 40 percent in volume as compared to 20 percent in the smaller towns.

Under either definition, however, canned foods are important because of their volume, in that they lend themselves to promotion results, are relatively non-perishable, enjoy little shrinkage, are easy to handle, often carry a fair profit margin, sell with little effort—considerably on impulse, and attract customer traffic. These two last words are said *with tongue in cheek.*

Still another reason for the importance of canned foods is that, according to the Bureau of Labor Statistics, out of every dollar a family spends for living, 35.4 percent goes for food; which means that all commodities food is the most consistent in demand. *True Story Magazine* recently completed a survey of baskets containing $2 or more in groceries. Canned vegetables was the leader with 52.8 percent inclusion; whereas, in comparison, only one out of four bought bread and one out of ten cakes or pastry. It can be fairly stated that the relative importance of canned foods to other foods is proportionate to the merchandising effectiveness with which they are handled by the factors in distribution. Is not a canner a distributive factor?

Merchandising Defined and Related: Merchandising of canned foods is the science of accelerating their movement into the hands of the consumer. Marketing or distribution, as a general term, refers to all flow; whereas merchandising is a general functional term describing effective flow. Merchandising, therefore, is the lubricant of the machinery of distribution. It insures continuous flow. The American Marketing Association says that merchandising is "The planning involved in marketing the right merchandise or service at the right place, at the right time, in the right quantities, and at the right price." Another authority says of merchandising that "It is the speed-up of the movement of merchandise so that you achieve maximum sales with minimum stocks." We think that merchandising plans correlate and activate all the factors which count in the modern revolution of food distribution. Although merchandising has been a spark plug to the food processing industry, consumption of canned foods is not up as much as is justified by consumer eating habits and present incomes. Is this not the meat of our discussion today? Of course, it's canned.

The Goals of Merchandising: The goals of merchandising are a sound profit to the merchandiser, a development of friendly relationships among all factors of the industry, and the upbuilding of consumer confidence in the modern American way of marketing. Do you include merchandising in your planning?

The Characteristics of a Merchandiser: The main characteristics of a merchandiser are disciplined thinking, leadership understanding, practical planning, untiring zeal, and strong character. A good product and a good fellow is not enough. He should love his work, respect himself and the average man.

The Tools of Merchandising: The tools of merchandising are those factors which a merchandiser uses in attaining his goals in the quickest, easiest and most satisfactory manner. They are several in number and all seem of some importance:

Advertising is one way to let people know what you have to sell. It must be consistent with a merchandiser's facilities and opportunities. It can be made practical, attractive, timely, honest, and a builder of goodwill. The better advertisers now use less black ink and more white paper, words describing taste appeal, meal planning, shopping suggestions, and homey phrases interesting to the young, the old, and the man as well as the kitchen queen. There's a fortune in "them hills of golden words" called consumer benefits. In the January 8 issue of *The Saturday Evening Post* a beautiful California picture ad used the somewhat trite words of "Garden Goodness," "Preferred by more women," "Flavor first." In a Florida Tangerine ad, however, such golden words were used as "Fun to Peel," "Between meal snacks," "Grown for lunch boxes," "Brighten up dishes," "Zipper skins," and also a tin can was shown. Every ad should be built around an important idea—*important* to the consumer.

There is another homely but pertinent fact, not shown in any statistics, but a fact none-the-less, which enhances the outlook for greater canned foods volume in the future, and which, I think, we have thus far failed to recognize in its full significance, advertising-wise.

It stems from the good old American custom of being always in a hurry. We do so much of it that frequently we catch ourselves rushing from one place where we are bored to death to another place where we can be bored to tears. We use the automobile to avoid walking out to the golf club and to get there quickly, in order to spend three or four hours walking around the golf course. "Time-saving" is the theme in the advertising copy we read every day about everything from thimbles to tractors.

And it is natural, therefore, that the ladies, God bless 'em, have taken up the idea. Why not? We rush home at night, fighting the outbound traffic, jumping the green lights every chance we get and cussing every other driver on the street for delaying us. When we get home, we fall into the easy chair, reach for the evening paper, and yell at somebody to know when dinner will be ready! At the table we tell Mother and the kids all about the problems of the day, and how busy we've been, and that's why we didn't get by to pick up that package she called us about. Next morning, we start the whole process all over again. And the girls have caught on.

It ill becomes me to say it, of course, but the truth is the girls just aren't as rugged as they were a generation or two ago. For that matter, it has been quite a spell since I chopped a load of fire-wood, myself. The point is, the hand that used to rock the cradle now manipulates a can-opener! It *may* be progress,—it *certainly* is evolution, and, since it's true, we in the manufacturing and distribution of canned foods would be a little silly not to capitalize on it to the fullest extent. I don't think we have done that yet.

Distributors can merchandise effectively only so many *brands.* Their policy on *what* brands has to do with their choice as between nationally advertised, controlled label, and factory brands, or a balanced combination of the two or three. Consumer acceptance is measured by velocity of sale. The choice of brands is judged on velocity of turnover and opportunity for profit. The success of controlled brands is evidenced by large consumer acceptance to the utmost satisfaction of canner, wholesaler, retailer, and housewife. Why try to merchandise any so-called complete line for the sake of completeness? Merchandising is no cure for heart trouble. New brands are bought on a trial or guaranteed sale basis for the reason that the consumer may find them attractive.

Customers must be made and kept by getting better acquainted, calling them by name, not losing one without knowing why, using little gifts, boldly asking them to do business with you, and making them glad they did.

Displays attract people to merchandise. Retailers use a regular schedule of floor displays, gondola-end displays, meat and check-out counter displays on specific and related products, made more attractive by descriptive phrases which increase impulse purchases and emphasize ideas rather than price. Impulse sales, for instance, represent 45 percent of all canned soup volume. Canners' floor

display allowances are an interesting experiment, superior to handbill and newspaper cooperative usages.

The *plant* of the processor, *warehouse* of the wholesaler, or *store* of the retailer is important because its layout and utilization are the sources of economy in operating costs. Merchandising is made easier and more profitable, if merchandising at retail is made easier to buy than not to buy.

Pricing is proper when it is related to the type of store and services, to knowledge of competition, and to velocity of sale which will give an item its maximum movement and its rightful place in the daily diet of the customer. Proper pricing creates customer confidence which cut-throat pricing tends to destroy. The right price is neither too high nor too low. A few bargains don't hurt. Price-marking must be complete, clear and consistent. All administrative *procedures* are standardized, written down and utilized by personnel. Maybe.

Publications can be a major source of inspiration and information on merchandising, whether they come from the factor itself, associations, or professional sources. They are bought to be utilized today and not stacked up for tomorrow. Please stay away from my office.

Selling creates business by *assisting* customers. Its effectiveness stems from the selection, training, supervision and compensation of everybody from the general manager to the broom boy. It is also conditioned by the potential of the trade territory, the type of customers, the brands promoted, and the results achieved.

I must pause here to express the emphasis which I sincerely believe should be attached to the *selling* step.

It is, in truth, our all.

Our very license, issued by the city in which each of us do business, gives us the right to *sell*. We buy and pay for this license. It is one of the first things we do when we go into business, and we renew it every year.

Every other operation in this business of ours, starting with putting the seed in the ground for the growing of the tomatoes to be canned, and including every single act that we do thereafter, leads up to the one ultimate transaction—the *selling* operation.

None of us do enough selling. Selling ought to be our one continuous operation. We're in business to sell. Then, for Heaven's sake, let's *sell!*

Training of personnel should emphasize the foundation stones of courtesy, knowledge, incentives and aims. The end result should be the development of good judgment, consistent productiveness and a friendly spirit. Training courses are the most popular medium for merchandising education, but 16 mm. movies and sound slides are also proving valuable. Have you trained a man to take your place?

Turnover is guarded by inventory control, but proper turnover is achieved only when an item pays its way in consideration of investment, overhead and mark-up. The smart wholesaler rates all brands by their velocity of turnover. Why ask a retailer to push a fifth class velocity "dead dog" or even a third class? Wanted: A buyer for 217 cases nationally advertised cocktail sauce properly aged!

How Canners Can Help in Merchandising: Canners can help in merchandising by practicing economic processing operations, staying close to their source of supply, investigating and making a choice of their customers, investigating and making a choice of their sales agents. Also by working for uniformity in grading and for improved quality, making frequent appraisal of price practices, understanding the importance of cash discounts to wholesalers, and above all, by using supply policies which recognize the value of distributive turnover instead of inventory speculation. You, too, have an inventory, warehousing and banking problem.

There are some food manufacturers who have adopted a policy of partnership merchandising. In the plan of one manufacturer partnership includes an agreement which equalizes the overhead service costs of the processor by returning at stated intervals a percentage of sales to his customers after they meet certain requirements. It is legal. Step out.

Canners, particularly those with national distribution, need to inform the merchandising departments of wholesalers at least 90 days in advance of their promotions. Few do. We prepare our schedule in 13-week quarters and in advance.

Canners, moreover, might well restudy their advertising allowances, if any, to make sure that they are not discriminatory in application. Most are. I suggest that advertising allowances be eliminated and, in lieu, I advocate a merchandising allowance for the wholesale function based on rating of merchandising services by an impartial Rating Board. Advertising would be more effective if every factor paid for his own. Retailer advertising should merchandise each department of a store without reference to paid allowances. If an item is worth advertising, it is worth displaying and clerk promotion. Retailers suffer from soap nightmares—neither "Delicious nor Refreshing."

In every rural community the canner has an opportunity to take the lead in community development programs through the medium of contests and awards. This type of leadership brings to the grass roots a sort of progress which will safeguard their competitive future as a producer and as a market for merchandisers. I'll tell you for the asking how it is done in middle Tennessee.

The canner has seen the farmers doing a progressively better job in food production by mechanization, a development of resistant varieties of plants, the use of new insecticides, of synthetic hormones, and of more fertilizer, but he has not done his job as a merchandiser unless he has tried to sell the farmer that the law of supply and demand cannot be revoked or changed by governmental edict or law. This job, of course, calls for diplomacy.

How the National Canners Association Can Help in Merchandising: The National Canners Association can help distributors by:

Expanding its merchandising program to a degree at least equal to that of the meat, the dairy, the coffee, the tea, the baked goods, and the candy industries; i.e., if menus are promoted, offer only the best; if particular themes suggested, use originality and artistry; in periodical advertising, movies and radio script make the most of institutional opportunity; capitalize on the romance, the travelogue, the research that goes with canned foods; and again, remember, the consumer benefits;

Expanding education on product quality in programs similar to last year's corn cutting bee; all commodity groups would profit by a similar cutting;

Extension of the idea of this symposium to panel and forum discussions of specific topics of merchandising, highlighting examples from personal experiences of merchandisers. Distributive associations find merchandisers' cuff statements more interesting than prepared speeches;

Creating a committee to study general merchandising problems, with a sub-committee for those selling everybody and a subcommittee for those selling mostly through wholesalers. At retail the independents are getting 52.5 percent of the volume, but the chains and large super markets with their 47.5 percent are fast catching up; wholesalers need your merchandising advice—and you may need them as customers. Merchandising is part of canner's production cost if your goal is satisfied customers. And since motivated by consumer interest—group action should be legal;

Dissemination of information on your code of ethics among wholesalers. Your practices in good faith of principals might be inspirational.

Keeping up the constructive work which has been done in making labels more attractive and informative. Much more can be done in passing along to the public a word picture of the intrinsic value of contents. Look back at the December advertising of the lowly pork chop by the American Meat Institute, collaborating with the American Medical Association. Calories and vitamin values are still almost news to the American homemaker;

Closer cooperation with state and regional associations. They want your guidance;

Development of better and more commodity groups. The peach, pea, kraut, cherry, cranberry and citrus merchandising aids are just grand.

How All of Us Can Help the Merchandiser: All of us can help the merchandiser by believing that:

A merchandiser is no slave to fear, but speaks forth boldly against socialistic trends in State and Federal legislation;

A merchandiser should not fairly be asked to compete with a tax-exempt processor or distributor;

A merchandiser is a middleman who is service-desirable and cost-reducing for the wage earner and the farmer;

A merchandiser believes that the independent distributor and his suppliers must prosper if free enterprise is to survive in America;

A merchandiser cannot compete with unfair competition without becoming unfair. He will not want to see the Robinson-Patman Act weakened by amendments—clarification is okeh;

A merchandiser cannot do a proper job unless he can meet legitimate competition in his delivered price;

A merchandiser does not want a subsidy, but he asks for a fair deal for distribution, which employs more people than farming and manufacturing combined.

A merchandiser wants to encourage all of our privately endowed and State universities in implementing courses in food research and study, as only a few are now doing;

A merchandiser questions the trend toward undue concentration of manufacturers, processors and distributors into a few big companies, notwithstanding the advantages that accrue in efficient management, good production engineers, technologists, and research facilities; bigness, as such, is not condemned;

A merchandiser welcomes Teamwork of a kind that speeds up the wheel of distribution, strengthens the spokes, hardens the hub, and greases the axle;

A merchandiser is an apostle of Partnership among principals, employees and customers;

A merchandiser wants nothing that simple living, high thinking and hard work cannot produce.

How to Rate the Wholesaler: And in conclusion, you might rate your wholesale merchandiser by finding out if—

He is a low-cost operator

He uses a fair-price policy

He offers merchandising advisory service

He features brands on the basis of velocity of turnover

He serves the industry as well as himself

He serves his community as well as himself

He merits friendly confidence

He pulls his share of the marketing load in his trading area.

REPRESENTING THE GROCERY MANUFACTURERS OF AMERICA

Paul Willis, President of GMA

I want to pay tribute to the canning industry for the important part it plays in "The Life Line of America"—the long line of essential processes between food in the field and food on the table. This "Life Line" slogan has been most helpful in developing a clearer understanding and a fuller appreciation of the immenseness of the food industry, and particularly the interdependency which exists all along the line. It is highly desirable for the farmers, processors and distributors to fully understand each other's problems and for them to work together. This constructive working relationship, in my opinion, is the first necessary step toward good merchandising of canned foods.

There are, of course, a number of successive steps, all tied in together, which must be taken to build and promote both the sale and the consumption of canned foods.

Quality

Of outstanding importance is the matter of uniform good quality and the necessity of constantly striving to improve that quality. Canned foods are not only in competition with all other foods and the consumer must be satisfied with the quality of your products in order for you to gain her repeat order.

We had a clear example of the consumers' appreciation of quality during the rationing days. When ration coupons were at a premium, consumers insisted on getting the best, and for the best they looked to the well-known brands in which they had faith.

Processors should keep fully alert to the quality desired by the consuming public, and to supply the quality the consumer wants to buy instead of forcing upon her what you want to sell. A processor, at very little expense, can set up a panel of consumers through which to test his various products and thereby ascertain the consumers' likes and dislikes. A successful processor today must have the facts to guide him. Hunches are no longer good enough to meet tomorrow's competition.

It should be the policy of a manufacturer and processor to pack to a standard of quality rather than to a price. Packing to a price may provide a temporary sale, but this policy does not build permanent business for any company, and it hurts the general consumption of canned foods.

This matter of improving quality applies regardless of whether the product is an advertised or non-advertised brand. The better the quality of all canned foods, the better the prospect of increasing consumption.

Labeling

Every can and package should contain sufficient information on the label so that consumers may know exactly what is in the can. This is of extreme importance. A good descriptive label will win consumer friends for the product because it helps people to find the right product for the right purpose, and this puts variety and appetite appeal into the family's meal. Remember that the grocery shopper cannot see into the can. The label must tell her what is in it.

Pricing

Canned foods must, of course, be priced attractively from the consumer standpoint both as it applies to the value of the products themselves and in relation to products which might be used in their place.

In connection with pricing, I want to mention that advertised brands of food and grocery products have been built largely upon the basis of a uniform pricing system. This assures fair or equal competition and promotes unit-pricing at psychologically effective levels. This is highly desirable as it applies to the manufacturer, the distributor, and the public.

Merchandising

The modern method of merchandising is for the manufacturer or processor to sell his goods *through* the distributor rather than *to* him. Selling goods through the distributor means that the manufacturer retains a continuing interest in the ultimate destination of his products, and will do what he can to stimulate the movement.

No processor should load the trade unless he provides effective merchandising assistance and ideas to help move the goods out of the stores.

You should encourage distributors, particularly at the retail level, to familiarize themselves with the contents of your package so they can tell consumers about the quality of the product in the can and of the many attractive uses for it.

To do an effective merchandising job, distributors, particularly at the retail level, should carry sufficient stock in order to keep the shelves well filled, and to make an adequate display. All of this provides an attractive appeal which will influence consumer purchases, and it also mini-

mizes costly out-of-stock situations, which conditions unfortunately exist in too many stores.

Advertised Brands

Advertised brands really are the balance-wheel of the industry.

The intelligent pricing of national brands gives stability to the whole canned foods market, and the stability is welcomed by distributors. The price of the nationally-advertised brands sets a guide for the seller and buyer of the unadvertised or private brands.

The tremendous amount of research work done by the manufacturers of advertised brands in the improvement of the quality of canned foods through better seed, modern equipment, etc., is of ultimate benefit to all processors and, of course, to the public.

The processors of advertised brands must maintain top uniform quality; otherwise they cannot afford to advertise. No one can afford to advertise for a one-time sale.

The constant attractive advertising and promotion of advertised brands creates a public interest in canned foods generally from which the entire industry benefits.

Advertised brands now enjoy an all-time high from the standpoint of consumer demand. A. C. Nielsen recently reported that the turnover velocity of advertised brands is 54 percent faster than the lesser known brands. While there are undoubtedly several reasons for this, one outstanding reason is that the consumers have assurance of always getting uniform top quality when they purchase known brands . . . an assurance which means a great deal to them.

Increasing Consumption

The canning industry *can* increase the consumption of its products through stimulated merchandising programs.

In 1948 the per capita consumption of vegetables was about 295 pounds. Although canned vegetables were reasonably priced during the year—and despite the fact that they are easier for the consumer to prepare and serve—canned vegetables accounted for only 38 of those 295 pounds.

With respect to fruits, per capita consumption of the canned variety amounted to only 36 pounds out of a total of 175 pounds.

While the per capita consumption of your products was greater in 1948 than it was prewar, total consumption figures show that there is ample room for sales expansion.

That expansion can be realized if you sell more American homemakers upon the convenience features of canned foods, upon their quality, and upon the fact that they are "good buys" in the market place.

While we are hearing a lot of good merchandising ideas at this session which will be helpful, we must remember, however, that we are largely talking to ourselves, and that the consumption of canned fruits and vegetables will not be stimulated unless we go out and tell our merchandising story to the American people. Our knowing these facts about canned foods is not enough. The homemakers who buy them must know the facts too.

The Food Industry

While we have been talking specifically about canned foods, I would like to inject this note: All of us should consider ourselves a part of the total food industry, and do everything possible to promote the interests of the food industry. This includes all of the essential processes of growing the crop, processing, packaging, transportation, distribution, etc. As a united front, we can build the food industry to higher and higher levels, whereas if we play one food against the other we divide ourselves, and this opens the door to those who are always eager to attack us. Let's keep selling and building the whole food industry in which each of us has an important part.

Grocer-Canner Session

1949 EXHIBIT OF CANNING MACHINERY AND SUPPLIES

By Hal W. Johnston, Canning Machinery & Supplies Association

I want to thank you officers for giving me this opportunity to speak to you for just a few moments. Usually when someone secures time on a program of this sort his purpose is to get something from those to whom he speaks. I want to assure you at the outset that I don't want to get something from you; I want to give you something. I am here on behalf of the Canning Machinery & Supplies Association to extend to you a cordial and sincere invitation to attend the great Atlantic City exhibit of the Association.

The big show is ready and awaiting your inspection. It has purposely been opened one day in advance of the usual period so that you members of the National-American Wholesale Grocers Association may give it a preview this evening between the hours of 7 and 10, and we hope you can take advantage of this special arrangement.

I want to impress upon you right now that this is no ordinary exhibit. It is the biggest thing we have ever had. As far as our industry is concerned it is really "the greatest show on earth," if I can be permitted to borrow this billing from Barnum and Bailey. It is not only big, but it is important. It is just chuck-full of information, of facts, of exhibits that will make it possible for you to go into 1949 prepared to keep up with the competition, to keep your costs in line, and to make sure that when this time next year rolls around your profits are just what you'll like them to be.

Although this exhibit is designed to help the food preservers for what lies ahead, through it you may find many angles applicable to the business of wholesale distribution—new ways of meeting higher costs where labor plays such an important part—thus meeting competition and overcoming the greater sales resistance that you will encounter this coming year.

At this exhibit you will get facts, information, and know-how that you and the key members of your organization might spend months of travel and thousands of dollars to get otherwise.

It will all be in one place, under one roof, available to you in orderly, well-arranged, attractively decorated space. You can learn here how to lower costs. This exhibit will give you ideas and information that will permit you to operate your plant more efficiently, more economically. Here, too, you will find information on new and more effective methods of merchandising that result from simpler, more attractive, more colorful package designs.

The exhibit will let you inspect new glass handling machinery, new ways of handling tin cans in a cookroom, new methods of putting frozen food in

Joint Grocer-Canner Session

The Annual Convention of the National-American Wholesale Grocers Association was in session beginning January 11 and its closing program on January 14 was merged into the first day of the National Canners Association Convention. This was accomplished in the form of a joint meeting under auspices of both Associations and with both presidents presiding as co-chairmen—Arthur W. Lutz and Howard T. Cumming, respectively. The over-all subject of this program was The Promotion of Canned Foods, and the various speakers talked on this subject from the point of view of the segments of the industry each represented. This section of the Convention Issue reproduces the addresses that made up this joint N.A.W.G.A.-N.C.A. session.

a package, new fruit canning machinery and hundreds of new machines, ideas, processes and methods. This is the kind of exhibit it will pay you and every member of your firm interested in sales or production to visit. You will get from it many of the facts that you will need to help you "keep in line in '49."

Even the exhibits this year will be streamlined to give greater effectiveness and ease of accessibility to those of you who visit this great show. The very latest canning and processing machinery, equipment for packaging, labeling, casing and handling will be on display, together with the thousands of accessories produced for the speedy, economical and up-to-the-minute handling of preserved foods.

The same great building—one of the largest of its kind in the world that houses this mammoth exhibit—likewise will serve as headquarters for the meetings of the National Canners Association members. It is hoped that many of you will stay over to meet some of your canner connections and that you likewise will visit the exhibit during the regular hours, as described on the folders to be circulated among you.

Many of you are actually in the food preserving business, operating your own food preserving plants. For the first time in a number of years admittance to the convention and to the Canners' show will be by badge; this is absolutely necessary this year to insure a proper participation for all those in attendance in a daily contest for prizes which will be awarded the holders of scores of lucky tickets throughout the week. The awards will be made to members of food processing firms only.

More than $1,000 per day will be invested in valuable and useful prizes for those who attend the exhibits and the Convention sessions.

And there will be plenty of fun, too. In addition to all this, on Tuesday evening, January 18, the great Fred Waring show will be presented at the Warner Theater on the Boardwalk with those in attendance guests of the Canning Machinery & Supplies Association.

Plan to have your sales and production men present at the formal preview opening this evening from 7 to 10 p. m. Then if you can spare any additional time, become a regular attendant at any hour specified on the card from Saturday to Wednesday evening, January 19, when the exhibit formally closes. The chances are you will have a most enjoyable time and see many of your friends in our joint industries and perhaps you will be kind enough, as our guests, to take in some of the other special events always held in conjuction with the National Canners Convention.

A MARKETING ANALYST LOOKS AT THE CANNED FOODS INDUSTRY

By William H. Schille,
The Biddle Purchasing Co.,
New York City

I am very glad to appear on this program today to present my views, which are also those of my associates, on the future of the canned foods business. That question has concerned us, as I am certain it has all of you. Therefore, a discussion before such a gathering of industry leaders, both distributors and packers, is timely.

As most of you know, the company I represent has a big stake in the future of the grocery business, particularly canned foods. We have devoted much thought and attention to the problems ahead and are more than eager to share some of our own ideas with you and to benefit in turn from the seasoned judgments of such men as Mr. McCartney, Mr. Baxter and Mr. Pickus, who will follow me on this platform.

You, therefore, will have an opportunity to hear a number of views, from which there should evolve a composite picture of what may well be expected for the next few years.

Most of my facts are backed by statistics, although I am not going to burden you with a lot of figures.

Before we can attempt to look ahead for the next few years, I feel it is necessary to take a quick look at our industry to see where we stand today. The one overwhelming fact that impresses me, and which must affect the thinking of all of us on this subject, is the tremendous growth of the industry in the last few years. During the five years immediately preceding the war, the processors packed, and the distributors distributed, an average of less than 220 million cases of the principal canned fruits, vegetables, juices and fish.

But in the all-time record year of 1946, the industry produced almost 365 million cases of these same items, a two-thirds increase over the quantity that, in prewar years, took some hustling to sell. And let me remind you that the distributors moved this gigantic pack with very little help from government buying.

Then in 1947 they moved another pack on top of that that was a full 45 per cent above prewar, and today they are distributing a 1948 pack that is probably no more than 10 per cent under the previous year.

Increase in Unit Volume

That's physical volume. These comparisons are not in terms of inflated dollars and cannot be dismissed with the standard comment that higher prices are responsible for the huge increase. Retailers in lines other than grocery are reporting unfavorable comparisons with previous years on both a dollar and a unit basis. Our industry is unique in that our unit volume has had a tremendous boost and our dollar volume is up principally because of that increase in unit volume.

It should be comforting to all of us, that canned foods—most of them—did not advance as much in price as most other commodities. If they had, and our physical volume had also attained the heights it did, Congress really would have heard an outcry for an excess profits tax—one that could not be silenced.

These large volume figures offer some challenging suggestions, chief of which is that today's canned foods industry is a far different industry than the one that entered the war. Old concepts must be replaced by new. Old ideas of volume, consumption, supply, consumer demand and even consumer preference, must give way to a realization that the industry must face its new problems with new techniques. Most of our old statistics might as well be thrown away.

Let me explain. Admittedly, there are well-founded reasons for worrying about the huge productive capacity of the industry. Yet in plain truth there would be shortages of many items if packs were held to prewar levels. A comparison of production or consumption with prewar simply is not valid. Consumption never will go back to prewar levels. Many new customers were added by the war. Housewives who did not use canned foods regularly learned about their convenience and excellence. Furthermore, millions of boys in uniform became accustomed to canned foods, and carried their new eating habits into civilian life.

There is one point frequently overlooked in making comparisons with prewar days. In the past eight years the population of this country has increased about one-eighth. We have somewhere near 18 million more customers and potential customers than before the war.

Each new year adds a little more than 1½ per cent to our population, although the rate of growth is slowly diminishing. Now there are a number who seem to believe that the future welfare and expansion of the canned foods industry will hold close to this 1½ per cent population gain. I do not hold with this kind of thinking. I believe an examination of the conditions that govern the industry will bear me out. Let's look at a few of them.

In the field of exports and imports, there has been a lot of loose talk about possible large-scale movements of canned foods under the Marshall Plan.

There can be no doubt that the European peoples would like to have quantities of our fruits, vegetables, juices, fish and meats. They are hungry, but they are not as desperate as they have been, as shown by the fact that 60 percent of our ECA shipments currently are comprised of recovery goods and 40 percent of relief goods, whereas the opposite was the case just a year ago.

They would like to have canned foods, but they feel they cannot afford to part with their precious dollars to get them.

Under the Marshall Plan each country has the power, within limits, to say what items it shall buy with its American dollars. Almost without exception the countries of Europe have declared canned foods to be nonessential luxuries and won't let their own importers bring them into the country. In light of the fact that canned foods have never bulked large in the diets of Europeans, this is understandable. We have shipped them in other years a few canned fruits and juices—about 6 percent of our total packs of these two on a prewar basis—and occasionally some low-grade peas, but our total canned vegetable exports average less than two-tenths of one percent. The net effect of these exports on our own markets has been negligible, large as they may have seemed to the individual processors who engaged in that business.

Exports Historically Unimportant

Fortunately, the industry has never leaned on the export market in order to get a fair price for its production. By this I mean that loss of the nominal market we once had is not going to cut deeply into the prosperity of the industry the way the cotton people were hurt when our domestic market got out of line with world prices.

In my opinion, we can write off the export market as lost for a long time —some say for many, many years to come, particularly with the rise of North Africa as a food source for Europe. I don't believe it will be badly missed.

By the same token, imports of canned foods are negligible—usually so small that individual figures are not included in government statistics. There is nothing in the cards that indicates any change in this situation.

A far more important factor in the future of canned foods than exports or imports is our own economic well-being in the years ahead. What will happen to consumption, for example, if business declines as much as some say it will in 1949?

Well, in the first place, *do* we expect a drastic decline in business in general in 1949? I look for a continuation of the readjustment in prices that is occurring now. For business as a whole, production has finally caught up with demand and we have a buyers' market in all but a handful of lines, and there are hints of softer tones even in steel, the shortest of all major items. It looks as though we may have to be satisfied with a smaller volume, but there will not be an all-out depression this year. Too many factors are working against that. We have virtually full employment, which means a lot of cash in the hands of the ultimate consumer and more to come as a result of the fourth round of wage increases that is getting underway. We have a government pledged to spend at least $15 billion a year for defense and another $5 billion for the Marshall Plan. We have a system of crop supports which uses the power of the U. S. Treasury to keep farm prices from going below specified minimums —and those minimums are pretty high. Finally, there is not very much water in our economy at present—certainly not as much as in 1929. Breakeven points are high and it will be difficult to reduce them because a large part of present-day costs are fixed through union contracts. Freight rates have advanced substantially and are likely to go even higher than the level fixed by the last 5 percent interim increase. Profits are not out of line and are due to go even lower. It is my conclusion that price adjustments—and there will be some—will be gradual. There will be no collapse.

Projecting our thinking ahead until the time when the tempo of business activity starts to slow down noticeably, we must realize that we can expect this slow-down to be reflected in the movement of canned foods. That cannot be denied. There are, however, several factors that indicate the slowing in canned foods will not be as rapid, nor will the reduction be as marked, as in most other lines.

Canned Foods Becoming Essential

Canned foods have reached the point where they are an essential staple in the diet of the average American. While they cannot exactly be called a "poor man's food"—the poor man lives on cereals, potatoes, rice and beans, with an occasional helping of side meat—canned foods do fit into an important niche in the average man's eating habits. It may not be widely realized that consumption of canned foods, with only a few exceptions, climbs as incomes go up. This was conclusively proved by some Department of Labor studies a number of years ago and is the basis for the inverse statement that when incomes decline—as they must—we are going to see some decline in per capita consumption of canned foods. But here is the reason the decline will not be as severe as that felt by some other lines. When prices of any particular canned food start getting out of line, the housewife does not stop eating canned foods. Instead of buying Fancy peas, she may switch to Extra Standards or even Standards. Instead of buying asparagus at 45 cents a can, she buys a can of corn at 25 cents and gets approximately the same nutritive value for her family. I believe some of you here could testify that such a thing has happened recently, say, in the case of pears and a few other items that were, for all practical purposes, priced out of the market.

It comes down to this: A housewife will not turn her back on the convenience and lack of waste offered by canned foods except as a last desperate extremity. Frozen, certainly, and fresh possibly, will feel the pinch before canned foods. Since living standards of the lower one-third of the population have been materially raised in the past 20 years, we can expect consumption of canned foods to hold up relatively well as long as our economy avoids a nosedive.

Juices Gaining

Another factor that looms large in the picture over the next few years is the development and introduction of new canned foods. It sounds almost fantastic to recall that canned juices are relatively new items. None of the juices really gained a foothold until the early '30s, yet last year's pack exceeded 107 million cases. The orange juice pack alone increased in ten years from slightly more than one million cases to over 27 million. Production of fruit juices as a whole has more than tripled in ten years. Baby foods have jumped as much as 400 percent.

There are other examples, less spectacular perhaps, but equally illuminating. Canners and packers, through their greatly improved technological skills, have produced large packs of many items that are eagerly purchased by the housewife. Today we find such foods as canned ready-cooked fishcakes, ready-cooked hamburgers, canned whole chickens, frankfurters and other tasty meat products, and an increasingly popular pack of white potatoes. Actually luncheon meats, produced and sold in large volume, are comparatively new. Looking at it from another angle, we find the packers and distributors responding to the wishes of the ultimate consumer by putting up foods in convenient can sizes—the growth in the demand for 303's in the past year has been substantial and some believe this size eventually will displace the 2's.

What I have to say about packs of new items can be summed up this way: We have not yet packed everything that can be canned profitably. I ask the canners and packers to continue and intensify their search for new canned foods. I ask the distributors to be just as diligent in their search for new products, to give them

a fair test, and to merchandise them intelligently so that these products, too, can grow into respectable volume.

When we think of merchandising, we think of competition and price. Will canned foods, over the next few years, be able to hold their own against a rapidly growing market for frozen foods and the competition from the fresh produce industry, which is at last becoming merchandising-minded? Of course they can, provided distributors and packers do not neglect the merchandising and pricing principles that have been learned over the years.

Frozen foods are growing at a rapid pace, true, yet the tonnage is far below that of canned foods. Per capita consumption of canned fruits, juices and vegetables in 1948 totaled approximately 76 pounds; for frozen, the total was only 5.8 pounds. So far frozen foods are up against the same technical distribution problems they faced in their early years—chiefly transportation difficulties—but this does not mean the problem never will be solved. Housewives will force the industry to solve them because, frankly, some items lend themselves better to freezing than to canning and the housewives simply will demand the better product. Likewise, I expect to see continued gains on the part of frozen in the institutional field, this at the continued expense of No. 10's. For the foreseeable future, however, distribution costs are so high, compared with canned foods, that frozen will of necessity remain high-priced. Duplicated warehousing, selling and delivery facilities do not lead to lower distribution costs, and unless the volume is handsome, profits are not too encouraging.

Favor for Prepackaged Foods

In the case of fresh produce, which a number of distributors are seriously considering, and which some feel is a natural forerunner of entry into the frozen field, I have a word of warning. There is evidence that prepackaging of produce is great—great, that is, from the standpoint of the grower, the distributor, the retailer. Some tests have shown, however, that the housewife does not entirely share the enthusiasm of the industry for prepackaged fresh vegetables. She questions the "freshness" of the packaged item, she often resents buying four tomatoes instead of one or two, and she gets no opportunity to pick and choose. To date it looks as though the volume of most frozen foods is at the expense of fresh. If the opinions of a number of observers of the prepackaged field turn out to be correct, then possibly fresh may lose some more ground to frozen unless great care is taken in selecting items to be prepackaged.

Competition from dried fruits never has been very serious for canned, and of late years demand has been declining. Dehydrated foods, which promised so much in the early days of the war, never did fulfill that promise. Electronically preserved? There has been talk in that direction, but so far it is not practical on a volume basis, and I believe it will be years before it is, if ever.

So where does that leave us? We have been having record packs, and so far, a market for them despite the fact that only a comparatively small volume will move abroad. The year 1949 may see a scaling down of volume and prices. On a longer range basis I see growing, but not yet serious, competition from frozen and possibly fresh fruits and vegetables. I see a real opportunity for an imaginative research for new products that will cushion any decline—when it comes—in demand for individual commodities. I see a distinct possibility of lower purchasing power but with the decline in demand for canned foods held to a moderate scale.

This puts the future of the industry squarely in your hands. I believe the packers and processors will find it necessary to reduce their own operating costs, including that paid out for raw materials, and to tailor the size of their packs to demand. I believe distributors will have to continue their own paring of operating costs and at the same time increase the amount of intelligent promotion they place behind canned foods. With this job done, and canned foods held to a price level that gives the housewife her money's worth, the industry need not lower its sights from continued high-level consumption. If the job is *well* done, the years ahead will witness an actual increase in the total tonnage of food that moves in cans.

A CANNER LOOKS AT THE CANNED FOODS INDUSTRY

By John L. Baxter,
Conference Committee,
National Canners Association

"A Canner Looks at the Canned Foods Industry" is a perfectly good title for a public address, but it is rather a dangerous thing for a canner to do. In planning a campaign military strategists consider all the risks and weigh them. Then they evaluate the advantages to be gained by success. If the risks don't seem too great and the rewards of success look adequate, they put the campaign into operation. A real look at the canning industry would require some such procedure as that, and what a mistake that would be! Only the blind and those of reckless courage would be left in our ranks. The rest of us would be turning to some nice conservative occupation like playing the markets or the horses. Nevertheless "A Canner Looks at the Canned Foods Industry" is the subject assigned to me. I didn't choose it, but I'll have a try at it, and I'm glad my eye-sight is rather poor.

While my treatment of this horrid subject may cause floods of self pity to overwhelm the members of our industry who are present, it should at least exhilarate those of you who are not canners—by convincing you of your own comparative good fortune. And who knows but what it may strike a small spark of compassion in the steel-lined bosom of some canned foods buyer or government official? Should I be successful in such an achievement, I would consider my life's work well done and be able contentedly to retire to the occupation I've always longed for—crossing tender on a branch line of the Maine Central Railroad.

I refuse, however, to look at the *whole* canned foods industry. It has spread out so since I was a boy, that it makes me wall-eyed just to think of attempting such a wide-spread view. When you shoot at the flock, you usually hit nothing. So I'll pick my bird and confine my remarks to the seasonal canners, the shock troops of the industry, the boys about whom Tennyson wrote: "Theirs not to reason why, theirs but to do or die," although in spite of that there are now considerably more than 600 of them, so maybe they get along all right after all. That's encouraging.

A seasonal canner is a hybrid, a mongrel. He's neither fish, flesh nor good red herring. He's mighty like a mule in more ways than just his mixed parentage. As the word seasonal implies, he operates during the season when he can obtain raw material. Included in this category are the vegetable, the fruit and berry, and the fish canners.

The canners of vegetables, fruits and berries are half farmers; of fish, half fishermen. The other half of all three is manufacturer. Now that could be good if it were the better half of each occupation which combined to make these hybrids. If these canners enjoyed the public and governmental support accorded to agriculture, combined with such luxuries as fine establishments and highly paid staff personnel which real manufacturers possess, it would be fine. But they don't; it is the other way around.

These seasonal canners are heirs to all the hazards of agriculture without the privileges of nestling in the bosom of the public as represented by Congress and the Department of Agriculture. They are looked up on with suspicion by many of the powers that be who think they exploit the farmers. Well, maybe they would if they could, but if they couldn't how could they?

I've never thought the prospects of exploiting farmers were promising enough to waste time exploring them. Sometimes I've even had a vague feeling that something like that was being done to us.

As for the manufacturer's privileges, when you operate a plant for only two or three months out of 12, you can't afford frills; overhead is so burdensome in such operations, and working capital so hard to maintain, that a seasonal canner is able to invest in plant and in staff only what he must—not what he would like to.

Working Capital

Time was when the canner needed very little working capital. In those happy days before World War I, the distributor considered it his proper function to take in, pay for and store right after pack his entire annual share of the canner's production. Many conditions influenced the change to the present system where a large part of this burdensome function has been pushed back upon the canner. There was hand-to-mouth buying, a buyer's market, the rise of the chain store and super market and finally, the great increase in the number of canned food items produced. Now distributors just plain would not have warehouse room to perform such a function of equalizing the distribution, over a year's period, of canned foods produced in a season of two or three months. You might say that the greatly increased demand for canned foods now forces the canner to accept a part of the distributor's functions. It is costly to store canned foods and the marketing hazards pricewise are greater, for it is a general custom to make at least a partial price reduction when prices go down, and unusual for prices to follow the market up. Finally, there is the burden upon working capital.

That working capital burden is particularly serious right now. In the 'thirties, 200,000 cases of fancy corn would tie up about $400,000. Today the same inventory would require $650,000 of working capital. To that increase of $250,000, some $50,000 must be added for increase in capital tied up in supply inventories, making a total of $300,000. That is more than was often thought necessary back in the 'thirties in the way of total capital for a packer of that size. Only the abundance of bank credit allows many of us to stay in business. Besides that, depreciation is now insufficient to take care of necessary expenditures for replacement of worn out and obsolete plant, machinery and equipment. The major part of depreciation charges is on the basis of the old dollar, but purchases are made with dollars worth only about half as much. That compels the canner nowadays to put more money annually into plant than the amount charged off to depreciation.

Money invested in plant is just that much less in quick assets on the balance sheet. The distributor is faced with the same problem of finding capital to carry inventories at present price levels. One way he meets it is by reducing the size of his inventories, which is the same as saying he leaves the goods longer in the canner's hands. The canner can't push them back onto the grower, so he just has to grin and bear it.

By now you may reasonably wonder what the point is of my describing the various hardships connected with being a seasonal canner. Doesn't everybody have difficulties to contend with, and what of it if those of seasonal canners are considerably greater than the average? What good does it do for canner or distributor to worry about them?

Well, it doesn't do any good to worry about them but it is profitable to be aware of them so as to plan how to reduce them. The canner must know them, weigh them and somehow cope with them; or pretty soon he won't be a canner any more. It is tough enough being a canner, but it is even tougher being bankrupt. As for the distributor, if he is to have canned foods to sell, there have got to be canners to can them. Motherless production of canned foods have not yet been worked out by the scientists.

Society means "an association, a group of people working together for a common purpose." When you say "economic society," you mean groups of people working together for a common economic purpose. Add "modern" to "economic society" and with one word you've said that an almost impossibly complex relationship has grown up between groups, sub-groups and super-groups until a sneeze by the little fellow way down at the bottom of the line may well cause the giant up top to start blowing his nose, or even his top.

Bridging the Gap

These groups do, however, have common purposes. Maybe they aren't conscious of those purposes, but they are the economic justification for their existence. So it is with the two groups here today—the canners and the distributors. They are two intermediate sections, or components, of the food-to-consumer group. The first section is the farmer group. You can't get along without them. They are assisted by sections of many other groups, Government, machinery manufacturers, fertilizer and insecticide manufacturers, etc. Then come the canners, with labor closely associated, and with services required from many other trades. Transportation and brokers link the canner to the wholesale distributor. Then comes the retail distributor and finally the consumer, with innumerable services contributed by other types of industry all along the line. It is a human chain, with the over-all function of bridging the gap between the production job of the farmer and the hunger of the consumer. It is a long way from farmer's field to consumer's stomach, but when the chain holds together, when the team functions properly as a team, the flow is smooth and the job is easy. When, however, one link starts kinking up and puts double strain on another, or one member of the team carries out only a part of his assignment, things start to go wrong.

I'm neither wise enough, nor conceited enough, to attempt to act as coach for this team of ours—farmer, canner, labor, transportation, broker, distributor and retailer—whose goal is feeding the consumer. But I can and do point out that we *are* a team. Each member should be conscious of this and act accordingly. Each should know what the goal is; all should agree on the assignments of each, and each should carry out his own assignment. This is a professional team, so each member should have suitable incentive—pay—to put it bluntly.

More Cooperation

At the moment it looks as if the canner is assuming more and more of the farmer's job, in the form of various grower services, as well as an increasing amount of the distributor's functions, by shipping in small lots and carrying financial and storage burdens. That's all right if the canner is able to do it and wants to, and if his salary is increased. But although more pay for more service is justifiable in a way, that would unbalance the team. So I don't think more pay is the answer; and I do think that better appreciation of individual functions, better performance of those functions and more cooperation are the solution. Granted that I'm looking at the problem from the canner's viewpoint. Maybe we are derelict in some of our duties, but that doesn't excuse others for their shortcomings. Let them tell us also of the motes in our eyes and we'll have a try at casting them out, too.

Right now I can tell you of some of them. We should devise better incentives to farmers to deliver high quality raw material. We should more often throw away very poor raw material instead of packing it. We should not take advantage of a seller's market to the extent of profiteering. We should improve our understanding of the problems of our growers, our employees and our distributors, so that we can cooperate with them more sympathetically and more intelligently. We should know more about the consumer's requirements and desires, and about what our prices mean in terms of consumer prices. That

section of the industry which is composed of canners who market their own brands has done a good job in that direction; may have even encroached some on the distributor's functions. But the rest of the industry — the buyer's — label canners — know little and often care less what happens to their product once they have divested themselves of ownership. Their slogan is "When the distributors buy them, they own them; period." Of course that isn't teamwork, they're the canner's goods even though under the distributor's label. The buyer's-label canner needs to be nearly as much concerned about distribution and consumption as does the packer's-brand man.

As for the distributor, I can remember when anything he could do to the retailer and via him to the consumer was all right. That has changed greatly and now it is a matter of doing everything possible "for" instead of "to." That, however, can be and often is, overdone. In his anxiety to serve retailer and consumer there is great temptation for the distributor to depress canner prices too greatly when he catches the canner overloaded. Certainly oversupply requires lower prices to create demand sufficient to move the supply. But such price pressure should be suitable to the occasion and not of the sort designed to start all the canners running toward the exits. And price alone doesn't sell goods. Theoretically grower, canner, distributor and consumer should be glad when there are good crops, more food to eat. Actually the canner and the grower all too often are worried sick by this very success in doing their production job. I grant you that production must not be blind to consumption; but distribution should also be something more than auctioneering.

Responsibility with Privilege

I'm afraid this all sounds very idealistic; and ideals seem of late to be in bad repute; yet it is now of all times, when we need to be proud of them, to keep them strong, and make then dynamic. For instance, responsibility is an ideal, something in which one gives of himself; while privilege is nearly the opposite, a condition of taking. The two, however, are closely related or should be, because the more privileges a person has, the more responsibility he should assume. The United States is the most privileged Nation in the world. We here today enjoy privileges above those of the average citizen. We are duty-bound, therefore, to take our responsibilities seriously.

We believe in a democratic form of government and in a private-enterprise system of economics. The thought of any other governmental form and economic system horrifies us. Yet all too often we accept, even grab, the privileges which our way of life offers without paying for them by accepting their contingent responsibilities. For instance, I wonder how many of us carried out his responsibility of voting in the last national election? I hope it was a higher percentage than that of the Nation as a whole.

We like too well to get something for nothing. When we do that we are exploiting some one. Democracy and private enterprise are fine ideals, but they depend upon people to fulfill them. We can make them strong or we can destroy them, depending upon how well or how poorly we accept and carry out our responsibilities. It may seem absurd to imagine a bunch of canners and distributors as warriors for democracy against communism; but, although our sector may be rather small, we have our part to play in the world wide conflict, and that part is in keeping democracy true and private-enterprise not only enterprising but human.

The so-called communistic system works on the principle of a machine, a machine driven by a huge central power system. Each part is forced to perform its functions, or break and be thrown away. The democratic concept is that of a team with its members working together, each voluntarily doing his full share. Can the regimentation of Communism prove itself superior to the individual freedom of democracy? Is coercion more effective than cooperation? On us, and on millions more like us, lies the responsibility of proving that the answer is "NO."

A DISTRIBUTOR LOOKS AT THE CANNED FOODS INDUSTRY

By G. T. McCartney,
Director, National-American
Wholesale Grocers Association

It is with some hesitation that I accepted the privilege of speaking to you today, but, on second thought, it seemed an opportunity to reach a large segment of the canning industry on a matter that needs attention, not only in the industry's interest but in the interest of their distributors. I refer to the need of some aggressive effort to sell canned foods to the housewife.

The meat industry has its Meat Institute and a very effective program. The dairy branch and others of the food industry have joined with segments of the canned food industry such as canners of peaches, peas, cherries, and pineapple to increase the consumption of their products on a large scale and they have developed effective promotions.

This has been helpful, as far as it went, but I feel we need something more fundamental—something more basic—for the entire canned foods industry. We need a combined program backed by the canners, growers, can companies, machine and label companies, sugar and seed companies, brokers, wholesale grocers and retailers. The program should be set up for a period of two or three years, or even longer. A program of shorter duration will not get the job done.

How often have you heard people ask a waiter, "Are the peaches listed on the menu canned or fresh?"

Then what happens?

So often the person orders if they are fresh and passes the item if it is canned. This applies not only to peaches but fruits and vegetables all along the line.

Why have a great majority of consumers come to feel something is better because it is fresh rather than canned—simply because we have not made any great effort to correct this misunderstanding?

It is not necessary to go into the arguments here; we all know them. But the consumer has the idea ingrained so firmly in her mind that *fresh* fruits and vegetables are better than *canned* that we, who are more or less experts, have difficulty selling, not only her, but even the members of our own families on the canned products.

Outstanding Qualities

Why not tell the consumer of the outstanding qualities of canned foods? —foods of the finest flavor, picked when at the point of perfection and sealed in the finest of steel cans, when delivered a product even better than the so-called fresh product which may have been picked for days and shipped hundreds of miles before it was offered to the consumer. Products grown from seeds developed after years of research —products especially grown—when sealed in a can produce the finest flavored foods of all.

Sea foods, especially selected for flavor and then sealed in sanitary cans for the consumer's ready use without processing, are a wonderful convenience for the housewife.

One could go on almost indefinitely relating why canned foods are superior to many other types which, through misunderstanding of the actual merits, are now preferred.

Canned foods are much more convenient. Mrs. Housewife can carry a supply in any handy place for months, or even years at a time, and, in most cases, they are more economical than other food items.

Canned foods have advanced less in price than almost any other food item. They are more economical because they contain no waste. The public is interested in reducing the cost of living and this "public opinion" recently

elected a President who seemed to have no chance.

On first thought, you might think the foregoing applies only to the better grades, but, in spite of most skillful efforts, all canners produce lower grades which must be sold. This line of thought in the way of promotion also applies to the selling of lower grades. We have certain classes of people who prefer different grades of food. I have heard many say they like canned fruit in light syrup, or even without syrup, because they feel the so-called fancy fruit has so much sugar added that the flavor is lost.

However, we know water-pack fruit has been in the dumps for the past three years. Why?

Do you think that all the bakers have passed on or have quit using water-pack fruit altogether?—and have decided there is no place for fruit pies?

No! That is not the case.

Prices on water-pack fruits got so high that competitive pies took the business. There is a place for this business today just as there was eight years ago—with the proper promotion.

Selling the Pack

You probably noticed that even though the price of red pitted cherries increased more than that of almost any other fruit, cherry pie was available right through the war and it was consumed. Why?

Because the cherry packers got behind red pitted cherries and sold them to the public.

A consumer package containing just enough for one pie might be an idea. Some housewives dislike buying a raw material in a container that makes it necessary for them to serve the same item twice or more within a limited time.

In years of overproduction, concentrated effort might be put forth on the particular items or grade in oversupply.

Statistics show that, after every war, there have been increased sales of canned foods. But why wait for another war? That, we hope, will come too late for you to benefit from it. Why not do something now?

There is a need for canned foods, and consumption could be increased if something was done about it *now*.

This sort of thing shouldn't be gone into in a half-hearted way. We will have to make up our minds to put on a large, well-organized campaign of long duration.

Those in the few industries who have made an effort along this line are familiar with the process of setting up funds for this sort of activity.

This effort should be started by telling the consumer the benefits of using canned food, sanitary condition of canneries, inspection by the Food and Drug Administration and economy in using canned foods, the special care used in selecting seed and variety, the special care used in preparing the ground, spraying and thinning orchards, the care taken to use fruit or vegetables at the right time, how it is quickly sealed in sterile containers which preserve their perfect flavor, and all of the nutritional advantages not possible with the so-called fresh fruit or vegetables.

Improvement in labels is needed. A tie-up could be made between the advertising and the labels.

Let's get out of the rut we are in! I don't think we are going anywhere when we simply produce canned foods and make no cooperative effort to sell them to the consumer. We mustn't forget there is a turnover in consumers. The housewife who was an enthusiastic user of canned foods ten years ago may be dead now but, if not, it is a sure thing she is going to die some time. Let's not assume canned goods are just "accepted."

There is a tremendous variation in the diet of the people of different nations. In many foreign countries, canned foods are not used. Why is it they are consumed in abundance in some places and practically not at all in others?

What I am trying to put over is that food habits can be changed. While this country is probably the largest consumer of canned food per capita, it is obvious that canned food consumption can be increased immensely, and it seems to me that in addition to the thousands of dollars we spend to develop brand preference, industry itself should do something about overcoming the prejudice that exists against canned foods.

While practically nothing has been done about it and no one has really settled the problem, let's go back to the days of Eddie Hume, once President of the National Canners Association, who had a slogan: "What the canned foods industry needs is a new can opener."

Facility for Housewives

Let's make it easier for the housewife to use canned foods. When you see the implements used by some housewives in opening canned foods, you will wonder why they serve them at all. There is a great chance for something to be done about this problem.

A few other points might be mentioned. One is the matter of can sizes. I predict in this postwar period of real competition there is going to be more stress laid on turnover and giving the housewife what she wants when she wants it. With as many can sizes as we had before the war, it is very difficult for distributors to keep stocks up. This makes an unnecessarily high number of duplications with a correspondingly high investment.

I am sure the canners here understand the advantages of mass production in putting through volume without stopping to change lines. Why not make some effort to standardize can sizes? There has been a lot said about this but not enough done about it. Many sizes could be dropped. Instead of making new sizes every time markets change, why not decide on practical sizes and stay with them?

Label allowance is a problem particularly for private label distributors. We pay a great deal more for our labels than the standard allowances; in fact, many canners pay more for their own labels than they allow a distributor. The distributor should receive an allowance at least equal to the cost of the packer's label; in fact, I feel he should receive all he pays for his own label because the extra expense put in such labels is intended to facilitate sales which is in the interest of the canner.

Testing New Items

New items being put on the market should be tested in a market before being sold generally. Many items have been killed in their first offering by not being in the proper size container or some other weak merchandising point. This could be avoided if a market test were made before offering.

Loading of cars should be watched more carefully especially as long as cars are loaded as they are now—to maximum carrying capacity. I notice some of our shippers have made big improvements in the past year. Some seem to be getting worse.

Distributors receiving cars on a stop-over basis must take more care in leveling off the partial car which goes on to the final stop. Considerable savings can be made here.

My company, many years ago, woke up to the fact that we must consider the problems of our retail outlets. We have had a large voluntary chain for more than 20 years. We who are responsible for merchandising must give first thought in our decisions to the question of whether or not "this" is good for the retailer. We go back even as far as the consumer in our considerations. Is the product right? Is the can size right? Is the retail price right?

The old days of the wholesale grocer buying something, dumping it on the retailer and letting him worry from there on is gone. The modern and alert manufacturer is following the same course. He must have in mind at all times the interest of the consumer, the retailer and the wholesaler.

The old adage that "the survival of the fittest and the devil take the hindmost" is out of date. The canner or manufacturer who fails to give first

consideration to the benefits of his customers is bound to fail.

This, therefore, is an appeal to those in the canning industry to work *with* us and not *on* us. This is as much or more in their interest as it is in ours.

I appreciate this opportunity to get some of these thoughts off my chest. I believe they are constructive and I hope something will be done about some of the things I have mentioned, more particularly the matter of doubling or trebling canned foods consumption, which is altogether possible but something must be done about it immediately.

A SALESMAN LOOKS AT THE CANNED FOODS INDUSTRY

By Morris I. Pickus,
The Personnel Institute, Inc.

"Nothing happens until somebody sells something."

My good friend, "Red" Motley, President of Parade Publications, maintains that *anyone can make* a product, but nothing happens until *somebody sells it.*

The consensus of the experts indicates that there will have to be more selling done in the canned foods industry in 1949.

That old devil "over-production" is fast catching up with our ability to consume.

For the past quarter of a century, I have had an opportunity to work first hand with nearly 100,000 salesmen in many diversified industries.

At the start of this talk I want to make three direct statements:

1. What you don't know can hurt you.
2. You can change human nature.
3. You can be better than you are.

My topic this afternoon deals with the subject "A Salesman Looks at the Canned Foods Industry." Let us look at the canned foods industry, but let us look at it from the human side.

The three flat statements that I have just made concern the people in the canned foods industry and in the Wholesale Grocery business, and in the entire food industry.

I emphasize strongly that *people* are the most important part of any business, and especially the *food* business.

Therefore, I was shocked when I heard the general sales manager of a large wholesale grocery concern make this statement:

"I don't want smart salesmen in the wholesale grocery business—that's why I don't hire high school graduates as salesmen."

Further inquiry developed the fact that this man had never completed more than two years of high school himself and had set up in that large business a rule that he favors men who had a maximum of a two-year high school education.

In that same company, thousands of man hours of valuable time were being absolutely wasted in the initial training of wholesale grocery salesmen, and further inquiry developed the facts that this induction training was actually of very little value.

I could go further and tell you about two other wholesale grocers, one of whom stated he could use 50 and the other 100 new salesmen in order to cover new territories. In both cases two years had gone by and at the latest hearing management had procrastinated and was still at the "well, we-will-have-to-get-around-to-that-someday" stage.

Now, you can't sell anything, and particularly canned foods, if the wholesaler and the retailer don't have an adequate supply of competently trained sales personnel.

I agree that we should increase our advertising budgets. I agree that the retailer—both independent, chain or super market—should do everything in his power to merchandise canned foods.

But gentlemen, all of this effort, constructive as it is, will not do a good job unless we have modern, constructive, powerful, creative, high-type, aggressive sales efforts tied in with the merchandising and advertising activities.

I hold in my hand the aptitude evaluation reports on 11 salesmen for a nationally known canning concern. In fact, management members of that firm are right in this room.

These reports are on men who call on the retailer and men who call on the wholesaler.

These men were evaluated over two years ago. Management received an employee evaluation report revealing the areas of strength and weakness on each man. Each individual received an Employee Improvement Report, and his manager sat down and counseled with him and pointed out to that man specifically what he should do to improve himself.

Just last week we checked on these 11 men, and here is the "proof of the pudding":

Three of the retail men took the advice of management based on the aptitude reports and organized programs of self-improvement. They have all been promoted to wholesale selling positions.

One man who indicated that he was not interested in the selling of canned foods (although he had been on the payroll for nearly 10 years) has left the company and has gone into a different type of business with his brother.

Out of the remaining eight wholesale and retail salesmen engaged in the distribution of canned foods, seven showed a marked increase in their production.

The tests revealed one man as "below average." He is below average because neither management nor the man has planned anything to help him to follow through on a constructive program.

He is still a "white elephant."

What do I mean by white elephant?

That white elephant is a young man. He is 26 years old. He was 21 years old when he went to work. He has been employed for five years, so he is 26 years old. He may be an inside man or an outside man; he may be a bookkeeper or he may be a young sales trainee. That young man has been working for five years and he is a white elephant.

A white elephant is something that is valuable. It requires much more care and expense but it produces a lower yield each year. In the Far East in Siam and India, the white elephant is sacred. Over there, if anybody gives you a white elephant, you have to keep it and you can't put it to work. You have to house it and feed it. That is where we get the expression "white elephant."

This fellow has been working for five years. He is a white elephant and he doesn't like his job. He is not particularly sold on his company. He is unhappy. He wants to quit. He lacks proper *motivation*, so he is a white elephant. *But, his management does not know it.*

Merchandise a White Elephant?

If management bought a line of merchandise that didn't move and they were still carrying the white elephant merchandise on their shelves, *they would do something about it.* If they took a lease five years ago in a certain part of town and the town moved the other way and didn't have a 100 percent location any more, the board of directors would sit up nights until that particular problem had been overcome.

If you manufacture a product that doesn't move and it becomes a white elephant, everybody knows about it. But it seems that being *human* we are at a loss to recognize or cope with *human* white elephants. We can measure the loss on a tangible white elephant but we cannot begin to estimate the loss on this young man—a loss incurred just because nothing was done to stimulate his progress and self-development.

I will now discuss another white elephant—a little fatter, a little bigger. This is the same young fellow and he has been with the company for ten long years. He is now 31 years old. Somebody died, so he got a promotion. He was pushed up one notch and gets a little more money. He

didn't quit five years ago because his wife was going to have a baby and he wanted to buy a new home. He was afraid to quit, *but he didn't tell management.* He stayed on the job and now he has been with the company ten years. He is not producing to capacity and is still not particularly happy. He is still a white elephant.

Now we consider a bigger and fatter white elephant—the same man. He has been with the company for 15 years and is now fat in the stomach and fat in the head. Last year at the annual banquet, management gave him a 15-year button for service. He has been with the company for 15 years and is a fixture in more ways than one.

More White Elephants

Lo and behold, we now reveal the fourth big white elephant. He is now a gigantic white elephant. He has been with the company for 20 years. He is considered a steady, dependable employee. Someone had an *opinion* and he is now a department head. But no one knows exactly how far he has progressed. No measure has been made as to how much of his capacity he has been using. He has been on the job for 20 years and *then* something happens. Management wants to expand; they may want to open up a new branch. Perhaps someone has left the company and someone has to be promoted. In desperation because they need a man, they pick him and make him the manager of a branch store or the manager of a very important department—and when put to the acid test—he *fails.* He flops because he wasn't ready for that job. They can't fire him. He's been with the company for 20 years—so he is demoted. He goes back to being a white elephant and stays with management the rest of his life and gets deeper and deeper in that rut until he finally reaches the grave.

This has been true about the 50 largest corporations in the country. It is equally true of the smaller companies. We just do not spend enough time and money "Building our Men".

Today, management says, "We need steady, productive men". I heard a sales manager say, "I had five salesmen. I just fired three. I need three new men". Every time an executive makes a statement that he needs men, he is indicting *himself.* He is proving to the world that he has been a poor manager of men or has failed to give enough thought and attention to the problem of building manpower.

Why is this problem of building manpower so important today in 1949? When you go into business you must have the "Three M's". I mean *Money, Materials* and *Manpower.* Most of us during the war did pretty well and we made plenty of money. In fact, in many cases we had so much money we couldn't use it in our own business. If you are a good risk, money is not a problem to you. Materials are pretty well alike. Whether you are selling one line or a competing line, there usually is not too much difference between them.

So where is the difference? The difference is fundamentally in *people,* and 85 per cent of the success of your business will depend on your people and their ability to out-think and outsell your competition.

I would like to get a note of agreement. I want you to be mentally affirmative. I want you to agree with me and say, "Pickus, you're right! 85 percent of my success depends on people." If you believe that and I believe that, then we will be in tune and you will understand the message I am trying to get over to you.

You say "Pickus, of course we want to build our men, but how are we going to do it?" I am going to show you how, but first I am going to display on this board the titles of eight reliable psychological tests, a knowledge of which is essential for a clear understanding of how you can improve your own people. These tests represent technical yardsticks used in *measuring* people.

On the subject of the measurement of people by means of aptitude testing, I want to add a word of caution:

Aptitude testing has been oversold in this country. In many cases it is a question of the blind leading the blind.

Academic psychologists who have never had any practical experience in business are attempting to evaluate practical business situations purely on the basis of aptitude tests, and they are failing.

Aptitude testing is only part of a complete selection and improvement program; unless you have a complete program you may find that aptitude testing alone may not produce satisfactory results.

Standards of Measurement

Using a salesman as an example, what specifically do we test for?

(1) We test for *Extroversion.* That means the ability to think outside of yourself. A successful salesman is extroverted. He doesn't worry over failure. He likes to work with people.

(2) The successful salesman is *Dominant.* He has confidence. He can lead people.

(3) A salesman must believe in himself, his company and in his product. Successful salesmen must have a high degree of *Self-Confidence.*

(4) *Social Dependence* is the fourth personality characteristic of a successful salesman. That means to what degree the individual depends on people. Is he a lone wolf? If he is *low* on social dependence, you can hire him as a night watchman because he doesn't have to talk to anybody. If you have a man who is too high in social dependence, he is liable to agree with everything the customer says about getting a big discount.

(5) *Sales Aptitude* is the measurement to determine whether the man has the drive for successful selling. I don't care how smart a man he is; if he won't work, he is not a salesman.

(6) *Mental Ability*—is the sixth quality and that is the ability to learn. On some jobs you need a high degree of learning ability and on other jobs it is a liability rather than an asset.

(7) *Vocabulary*—in certain lines of business a high vocabulary is a detriment. Many times we want a man who can talk at the customer level. In other fields of business a highly-developed and flexible vocabulary is an absolute "must".

(8) *Social Intelligence* — measures tact and diplomacy. This is the ability to adjust one's self to every situation.

The Man Who Was Saved

Gentlemen, I am now going to demonstrate the dramatic story of "The Case of the Man Who Was Saved". The title sounds like a detective story or a soap opera, but it is a true story.

On April 7, 1939, in the State of Michigan, a salesman employed by a company for two years was aptitude-tested. He wasn't tested for employment but was tested because the company conducted a personnel audit. They wanted an inventory made of everybody in their organization. They wanted to find out which people were strong and which people were weak. They didn't want to fire anybody, but they wanted to help the weak people, and by so doing strengthen their organization.

The results of this man's tests were as follows:

Extroversion—he scored slightly below average—49.

Dominance—he scored 45.

Self-Confidence—he went down to 35.

Social Dependence—he scored 90; this meant he was overly-dependent upon others—too easy-going—and that is not the personality of a strong salesman.

Sales Aptitude—here he scored 71, which is low.

Mental Ability—here he scored 18 out of 100.

Vocabulary—here he scored 47 out of 100.

Social Intelligence—he scored 16. The social intelligence score indicates whether you know how to be tactful and diplomatic with people.

Would you have hired that man for that business? Would you have hired that man knowing that he had these definite areas of weakness? We would not have recommended him to you. However, this man had been employed by that company for two years and we said to his district manager, "That's the story. What do you want

to do?" The manager gave us the right answer. He said, "I like the boy. I didn't realize he was as weak as your tests indicate, but I am going to keep him. He is my responsibility. He has been with me for two years. What should I do to build him up?"

We said, "What does a mother do when she has a sick baby? Does she spend as much time housecleaning or does she pay more attention to the baby? You have a sick baby on your hands. You must spend three to five times as much *time* with that man as you spend with any other man in your branch. We have outlined a specific Personal Improvement Program that will have to be supervised by you.

Directions for Development

The man must develop himself in several specific directions and we recommend the following:

A—Several courses in public speaking.

B—Planned reading of one recommended book every month.

C—Courses in salesmanship and personality development.

D—Engaging in outside activities—joining various clubs.

That was in 1939; the war started, allocations came in, and we lost track of that man—and then lo and behold, on November 24, 1944, the same man was retested because they wanted to find out whether he could be promoted to a *supervisory job*. This time he scored:

Extroversion—99

Dominance—99 Plus

Self-Confidence—96

Social Dependence—75

Sales Aptitude—75

Mental Ability—46

Vocabulary—82

Social Intelligence—24

The test scores showed a man who was about ready for supervisory work. He looked like a different man. He was outgoing, controlled selling situations, had confidence in himself. He was capable of standing on his own feet—of taking the initiative. His mental ability was about average and his vocabulary had improved tremendously. He was still not an outstanding salesman, and he had much to learn about handling social situations. However, most important were the personality changes which showed that he was capable of handling himself.

Our recommended Self-Improvement Program had begun to show results! That man had taken several public speaking courses, he had been reading a good book on personal development every month for five years and the manager had spent *time* counseling with him. *We recommended that man for promotion to the supervisory level.*

The scene shifts to 1947 when the branch manager had been moved from the State of Michigan to New York City and was now national manager, and he wanted to know whether this man was capable of being his assistant at the New York headquarters. So we tested him again. His scores now were:

Extroversion—95 On Extroversion he dropped down to 95.

Dominance—93 On Dominance he dropped down to 93. This was better for an executive because we didn't want him to be too aggressive.

Self-Confidence—90.

Social Dependence—About 80—a satisfactory sales executive's score.

Sales Aptitude—80 He still wasn't a topnotch salesman but he had more of the profile of an executive.

Mental Ability—60 His mental ability went up to 60. He was a slow learner but what he learned he would remember, and he was thorough.

Vocabulary—87 His vocabulary went up again to around 87.

Social Intelligence—50 This indicated continual growth.

We recommended his promotion as assistant to the national manager and submitted specific suggestions for further self-development.

Ladies and gentlemen, that is the story of eight years of a man's life. As he put it:

"Thank God I am with a company who realizes the need for the measurement of human beings and who are willing to spend the time and the money to invest in me and help me grow. I'm glad there is an organization like The Personnel Institute and others who can scientifically analyze and correct a man's weaknesses".

He said further, "I was making $250 a month eight years ago. I was promoted to a job at $400 and now I am getting $800 a month. If I hadn't been measured and given the opportunity to improve, I would still be pounding the pavement in the State of Michigan at $250 a month".

Too Much Human Waste

I get enthused about this important work because during the past 14 years I have seen many examples of "lost" men who were salvaged by companies who use modern manpower improvement techniques. The point that I am trying to get over to you this morning is that—

If you will take more time to understand your people, you can get them to improve themselves!

The need for manpower improvement is so great there should be as many "personnel institutes" in this country as there are schools. There is tremendous *human waste* in business and there isn't a business that would not be 30 to 50 per cent better if management would unleash the power and ability that is locked in the hearts and in the minds of its men!

I now want to come to the most optimistic portion of this talk.

I believe in the canned foods industry.

I believe that if it will develop its people in the same proportion that it has developed its manufacturing processes, its advertising programs and its distributive processes, it can reach amazing proportions.

I say this is optimistic because just last week I had luncheon with the vice president of one of the large food companies in this country.

Proper Training

This company employs over 1,000 salesmen calling on the retailers.

He is trying to sell his management on the fact that the average grocery salesman is underpaid. Fifty per cent of his salesmen average between $50 and $57.50 a week, and that is too low to meet today's standard of living.

Of greater importance is the fact that they continue to invest $1,500 during the first year on selecting, inducting and training a man.

Of even greater importance is the fact that that company continues to invest $1000 a year per salesman for sales training, self-improvement and sales development.

This company has a fixed budget of over $250,000 a year for sales training. Others are making similar investments. For instance, one of the largest wholesale grocers voted a budget of $50,000 to be devoted exclusively to sales training in 1949.

This is indeed very good news! It is my sincere hope that many canners and many wholesale grocers will start thinking about what they can do for their men.

For instance, a small wholesale grocer with 12 salesmen, can set up a budget of $500 a year per man, or a total of $6,000 yearly.

I can say to that wholesale grocer that if he invests $6,000 a year for 10 years—a total investment of $60,000 in 12 salesmen—he wouldn't have to worry about depressions or competition, because come hell or high water he is going to have a team that is going to make a profit.

The average person uses only 30 per cent of his ability. The job of management is to devote more time to the care and growth of its people.

The canned foods industry must raise its sights!

The same scientific methods used in growing, processing and advertising must be applied to the building of new and more productive canned foods salesmen.

The goal is clear: All it needs is *action on your part!*

Fishery Products Conference

WHAT FISHERY BIOLOGISTS ARE LOOKING FOR

By Dr. Lionel A. Walford,
Chief, Branch of Fishery Biology,
U. S. Fish and Wildlife Service

Here we are, sitting comfortably in this room. We are pleasantly warm. We are well-fed. We had a good breakfast of fruit juice, ham and eggs, toast and coffee; and we feel pretty good. At this moment a lot of other people in other parts of the world don't feel so good because they didn't have breakfast today at all. In fact, something like 50,000 people in various other parts of the world died since this time yesterday morning from extreme malnutrition or starvation. They won't be missed long, because since yesterday morning plenty of new lives were brought into the world to more than replace them. Many of those new lives are destined to be cut short by starvation; and during the little while that they last they will never be quite comfortable; they will always hurt someplace; they will never know what contentment means as we know it, because they will never have enough to eat.

The thought distresses us. We don't want that to happen. We'd like to do something about it. But what? How are all the people on earth going to get enough to eat? That is the great problem of today, which thinking men everywhere are beating their brains to solve. It is not a new problem growing out of the war, not a problem to solve by passing a hat, not something that will be solved in the next two or three years as soon as the rest of the world "gets on its feet again." Nor is it a problem from the effects of which we Americans could choose to exempt ourselves any more than we could choose to exempt ourselves from a plague.

Mass hunger; millions of people not ever having enough to eat. I am not talking of the sporadic, cataclysmic sort of thing that has touched most countries through all history, but of a growing destitution which is only enhanced but not caused by droughts and wars, and which has become chronic and shows no sign of abating. What happened to bring this condition about is by now a story quite familiar to us all; and yet we have to keep reminding ourselves of it all the time so as to appreciate what we are up against.

We all know how in the middle of the Seventeenth Century the population of the world started to change numerically. Where it had previously stood in a state of comparative equilibrium, it started to rise, at first so gradually as hardly to be noticed, but then explosively, with the consequence that during the span of only nine generations, the world's population increased from 545 million to 2,400 million. The change happened and is still in progress everywhere, even in already densely populated countries like China and India; even in remote places like Oceania, even in harsh countries like Africa. And there is no sign of leveling off in our lifetime. Right now 17½ million more people are living in the world than there were this time a year ago; a million and a half more people live in North America now than a year ago. Next year there will be about that number of people more than there are now.

All these new people would still require more space, goods, and food than are presently available, even if there were to be no further increase in population; and a world-wide struggle is in progress to provide at least a subsistence standard of living for them. Every artifice that man has been able to muster is working to increase the food production, and at the same time to husband fertility, so as to preserve the earth from exhaustion and sterilization. Thus agricultural scientists are working everywhere to discover how the land can be made to sustain a higher production of food. But with all the benefits that Science brings to Agriculture, the productivity of the land is not enough for the ever-growing requirements of the ever-growing human population.

Productivity of the Sea

This fact is becoming well established in every man's consciousness. Even if it were not growing more and more self-evident, books, magazine articles and news stories about it come off the presses every day to remind us of it. But long before the books started talking about it, when the population was just beginning its explosive increase, an awareness of the growing condition began to develop deep down in man's consciousness. It was stimulated no doubt by growing competition among men, discontent, the determination to "get out." The result was the discovery, exploration and exploitation of frontiers. Now we have arrived at a time when there are no more frontiers on land in the world. There is no place to get out to. We cannot any longer run away from limitations of food and space by pushing into new areas. We have arrived at the sea. That, some people say, is our new frontier remaining to be explored and exploited. There, they say, we will find the source of the food that the coming millions will need.

But the productivity of the sea is not limitless or constant either, any more than that of the land. Although there are still regions of the ocean untouched, the marine-wise countries have long exploited, and in some places severely over-exploited the most accessible areas. Nevertheless, the entire food resources of the sea are not yet exploited efficiently anywhere in the world. By efficiently I mean in a scientific manner with a design planned to get the most that the sea can yield on the average, continuously, for the benefit of the most people through all time.

Productivity Not Unlimited

Shortly after the middle of the last century thinking people in the maritime countries of northern Europe began to realize this. They asked themselves how long the sea could continue to produce lavishly under the intensive pressures of the growing demands. They recognized soon that they could answer this question only by understanding the sea and its life through systematic study. Thus about 80 years ago scientists started studying the great sea fisheries. A number of northern nations formed the International Council for the Exploration of the Sea; those of southern Europe the International Council for the Exploration of the Mediterranean, a short-lived organization which the Food and Agriculture Organization is now trying to revive; those of North America the North Atlantic Fisheries Council, which discontinued a few years ago, we hope only temporarily. During the last year Oriental countries like the Philippines, China and French Indo-China have formed the Indo-Pacific Fisheries Council.

These organizations serve to bring the fishery scientists of the several countries together to plan their researches which are of mutual interest. Thus the scientists can use their respective talents and facilities to the best advantage; they share the benefits of the knowledge growing from each other's results; they stimulate each other's inventiveness and together they recommend appropriate courses of governmental action. Such cooperation is not a response to pretty sentiment, but to harsh necessity; for unlike the land, large areas of the ocean are not staked out for exclusive use of certain people. They are shared by many, and a cardinal principle of scientific fishery practices is that it is impossible without the concerted effort of all governments concerned.

At the same time, a cardinal principle of fishery research is that it needs the help of many sciences—meteorology, physics, chemistry, physical oceanography—all of those as well as biology. And in biology itself it needs many different kinds of talents

and specializations: population statisticians, ecologists, bacteriologists, physiologists, systematists. Consequently, in every sense ocean fishery studies must always be team efforts—there is no place for the grandstand player—with many kinds of scientists, often representing many governments, working together selflessly as a team.

I can bring out some of these points more clearly by telling about some of the actual problems of the ocean fisheries. The most pertinent example, of course, is that of the Atlantic herring. This is a tremendous population—probably the most numerous fish in the North Atlantic. Along with cod it is probably exploited by more countries than any other fish. It lives over a vast area, from our middle Atlantic coast up as far north as Labrador, over to the European side into the North Sea into the Baltic, around Iceland, along the Norwegian coast, from the north of Scotland to the south of Ireland, and in the White Sea.

Study of Herring

We know that fishermen of 15 nations take out of the Atlantic Ocean between 3 and 4 billion pounds of herring annually. But when I say "herring," that is a great over-simplification, for although, scientifically, the Atlantic herring is classified as belonging to a single species it really consists of a population of races, communities, or stocks. There is a problem in semantics as to what word we should use. I am going to say stocks in this discussion. Such knowledge as there is about stocks of herring comes from painstaking studies which biologists have made throughout the area where herring are found, using the same biometrical methods that anthropologists use for studying the races of man.

From these studies we know there are different stocks of herring, but we don't know for sure how many there are. We know still less as to how those that seem to be easily recognizable behave; that is to say, how or when they migrate, or what makes them school or fail to school, and so on. We don't know in what proportions the total catch of herring is made up of the several stocks. The reason for this lack of knowledge lies in the serious obstacles that hamper any direct methods of study. The most serious of these is that no one has yet found any feasible method of tagging herring as American workers tag pilchards or sardines on our Pacific coast, or herring in Alaska. The trouble is that apart from the fact that the herring is one of the most delicate of fish—it cannot stand even the most careful handling and is much more delicate than our Pacific sardines—the whole process of fishing and marketing stands in the way of ever getting the tags back. Whereas, large quantities of our Pacific sardines and herring are normally made into fish meal and oil so that tags can be recovered by magnets as the meal passes over conveyor belts, the bulk of European herring is not made into meal and never passes over a conveyor belt. Most European herring are caught by drift gill nets; they are picked out of the nets by hand, usually at night; they are landed in many small ports and gutted and prepared for market by hand very rapidly, often in the very dim light of night or early morning, and there is very little likelihood that the workers would ever see any tags. Biologists have tried all sorts of tags so far without success. Eventually, of course, they will solve the problem. When they do it will only be because all the countries concerned will have worked together, by pooling ideas, conducting cooperative experiments, and by helping in recovering the tags.

Meanwhile, the life of the herring continues to be at least partially shrouded in mystery. They come within the range of fishermen just before their spawning season, or during their spawning season, or just afterwards. But where are they during the intermediate period? Their movements, such as we know them, are very undependable. They are subject to remarkable fluctuations in their availability to fishermen and in their actual abundance, too. These fluctuations are known to be associated with fluctuations in the pattern of currents. These currents are like highways along which the fish migrate, and they shift geographically in response to fluctuations in the winds. That is where oceanographers and meteorologists must contribute their efforts toward the solution of the herring problem, and where close international cooperation is necessary because no one country could possibly make the necessary weather and oceanographic observations. The European countries have yet to establish a concerted oceanographic and biological study of herring on the vast scale that this problem requires, and until they do establish it herring will continue to be an undependable resource, inefficiently utilized.

Fluctuations "Unpredicted"

People have called these fluctuations "unpredictable." They would be more accurate if they said "unpredicted." They will remain unpredicted until meteorologists and oceanographers working together learn exactly how to associate the force and direction of the winds with the system of currents, and until chemical, physical and biological oceanographers together learn how herring are affected by the water masses of the ocean.

Fluctuations in abundance and habit are especially characteristic of the pelagic fishes, that is, those that swim in the open sea like herring, sardines and tunas. During the last three years there have been two very dramatic cases in point, one in Europe, the other in North America. Along the coasts of Spain, Portugal and France there is a very old established fishery for a sardine which is rather closely related to our Pacific species. During the last three years these sardines suddenly became scarce, at first in the northern part of their range, and later farther south. At present the Portuguese sardine industry is very concerned by this disappearance and the Portuguese government is beginning an oceanographic and biological study to determine its causes. At the same time this happened we had a similar experience in the United States. Beginning in 1946 sardines failed to appear on the usual fishing grounds from California northward. The fishing fleet searched in vain for a catch, and the 86 canning and reduction plants centered at San Francisco and Monterey remained almost wholly idle. What was the cause of this sudden failure of sardines to appear where they had come year after year? Was it due to over-fishing or were there some unknown oceanic conditions that diverted the sardines to other grounds and perhaps killed the spawn or destroyed the adults?

Biologists had been studying the Pacific sardine for several years but they had been obliged to carry on most of their work ashore with insufficient observations at sea to make it possible to associate atmospheric and oceanographic conditions with the behavior of the fish.

Public Interest

Public interest is much more apt to be aroused by abnormal conditions than by the prosaic normal. We are much more ready to want to "do something" about a disaster that has hurt us than we are to study everyday conditions. So with the sardine. It took a disaster to interest the sardine industry to find means for making the studies that should have been made years ago. Now a superb example of inter-governmental cooperation is getting under way with the California Division of Fish and Game, Scripps Institution of Oceanography, U. S. Fish and Wildlife Service, Oregon Fish Commission, Washington State Department of Fisheries and the Biological Research Board of Canada, all participating; and oceanographers, biologists and meteorologists are bringing their several talents into this study. Four research boats are being used, three of them being supplied by the State of California, one by the Federal government. This is the first study carried on in the waters of the continental United States that anywhere near approaches the proper scale on which fishery problems should be studied.

Up to this point I have been talking about herring-like fishes because they

furnish more food to the world than any other marine resource, and because they are important to the canning industry. It seems likely that if more food, cheap food, I mean, had to be produced from the sea in the Northern Hemisphere it would come from among them. They are, however, given to capricious changes in behavior. When fishery biologists finally discover the nature and causes of these changes, there will be plenty of practical results—for one thing, a means of predicting changes before they happen; for another, a means of knowing where to look for fish when their disappearances are due to change of habit.

Most research biologists have at least two ambitions which are usually unrequited—one is to study fish populations under primeval conditions. They rarely get to do that, however; for it is not until after a fishery has become well established and something disastrous seems to have happened to the resource that the biologists are called in to "do something." Their other ambition is to study a fishery population with the amount of money, ships and tools that the job requires. Last year Congress appropriated a million dollars, which ought to go a long way toward satisfying this ambition for at least one team of lucky researchers. With this amount, the Fish and Wildlife Service is building a laboratory at Hawaii and commissioning three vessels, one of them primarily for oceanographic and biological research, the other two for exploratory fishing. The biologists will concentrate on the tuna resource of the Central Pacific. Their aim is the practical one of learning what we need to know about tunas in order to enable an American industry to establish tuna fisheries in that area on an economically and scientifically sound basis. The biologists will study the habits of the tunas and the way they are affected by all the interlocking processes of their environment like weather, currents, and food.

Pacific Salmon

The fishes I have been talking about spend their entire lives in the oceans and so are affected only by oceanic conditions, or indirectly by atmospheric conditions through their effect on oceanic waters. There is another type of fish, however, also subject to great fluctuations in abundance, but these are not entirely controlled by marine conditions. I refer, of course, to the Pacific salmons, which spend part of their lives in fresh water and part in salt water.

Because of the insignificant mass of fresh water streams as compared with the oceans, salmon eggs and young are more subject to the vicissitudes of weather than are those of purely marine fishes. Floods which scour or silt spawning beds, drouths that dry them, and severe winters that freeze them, all take their toll of the developing eggs. Young fish may be stranded in pools as flood waters recede and may be affected in many other ways be meteorological conditions. In fact, these effects have been so obvious and attention-compelling, that biologists have often overlooked completely the marine phases of the salmon life history. The greater accessibility and ease of observation of fresh waters have also acted to turn research efforts in that direction.

In salmon as in marine fishes what we need is a comprehensive approach to fishery research. Salmon investigators must study more fully the course of marine migrations of the various races, and must learn more about marine mortality and the factors affecting it. We cannot think of the run to each salmon stream as a separate entity, but must consider also its relation to other runs of salmon and to other populations of marine fishes through such inter-dependencies as predation and food competition.

The largest populations of salmon are in Alaska, where the product represents one of the most valuable canned packs of fish in the world. This product is now reduced in size, and to restore it to its former magnitude or even to maintain its present contribution to the world food supply will require a research program much broader in scope than the available funds have heretofore made possible. The Fish and Wildlife Service and the canning industry both have the same objective—to achieve the greatest possible continuing yield from the salmon resources.

I have wandered rather far from my topic "What the American Fishery Biologists Are Looking For." I started by talking about the problem of population growth and hunger in the world. What, now, does the work of the fishery biologist have to do with that? Simply this: Fishery biologists are working along with all the other scientists engaged in food studies to determine how best the fishery resources can be utilized to contribute to the world's food needs. Some of them are studying well established fisheries to find means of sustaining or even improving the yield by managing the way in which the fishing is conducted, by establishing the size of the nets and catch quotas; or by limiting the fishing areas. Others are searching for new fishing grounds or new species of fishes to exploit; still others are improving methods of farming fish or shellfish; finally there are those who seek to increase fish production by improving the natural food supply or other aspects of natural environment. This is one of the most promising of the new approaches to Fishery Science.

INTERNATIONAL FISHERY PROBLEMS

By Dr. W. M. Chapman, Special Assistant to the Under Secretary of State

Your chairman has asked me to speak to you on the subject of International Fishery Problems. The first and foremost problem of an international fishery is to have fish available to catch. It will be my purpose to discuss this problem in some detail and to indicate how the United States is attempting to meet it.

Fifty years ago, it would have been ridiculous for anyone to have suggested making a talk on such a subject before a group of men from the fishing industry any place in the world. Fifty years ago, it was considered to be an immutable fact that the resources of the sea were inexhaustible. To catch more fish all you had to do was fish harder. The more you fished, the more vessels went into the fishery, the more efficient those vessels, their gear, and their crews became, the more fish you caught. The sea was a bottomless reservoir of fish; the more you drained fish from it, the more there were to drain.

In those past 50 years, we have all had a good deal of experience in draining the sea of fish, and we have had it forced upon us by bitter experience that it is not true that the resources of the sea are so huge that they cannot be exhausted. In that space of time the following events have occurred:

1. The fur seal herds of the Pribilof Islands, which probably numbered originally 5 million individuals, were reduced to less than a quarter of a million seals. Then, by the simple expedient of not killing them so rapidly, the herds were built back to a level of more than 3½ million individuals, while a larger crop was being taken each year.

2. The halibut fishery of the North Pacific built up to a peak of yielding more than 50 million pounds a year, then dropped to where it could produce by the hardest kind of fishing less than 44 million pounds of fish per year. Again by the simple expedient of not fishing so hard, the halibut populations of the North Pacific banks have been built up until they produce steadily in the neighborhood of 56 million pounds of fish per year, and with about one third the fishing effort it formerly took to catch the 44 million pounds.

3. Two experiments of vast extent and tremendous expense have been carried out in the North Sea—that prime producer among all fishing grounds of the world. The fisheries there had been declining steadily for years. Then World War I came along

and for four years fishermen hardly dared to venture upon the sea. At the war's end, to everyone's surprise, the fish stocks in the North Sea had increased greatly and the fishing was good again. Soon after the large fleets of fishing vessels began working again, the great fisheries of the North Sea once more commenced to slide steadily downhill. Then came World War II. Once again few fishermen dared the open sea, and the fish once more had a rest period in which to breed and grow. Once again, at the end of the war, the populations of fish in the North Sea were found to have increased in size, the size of the individual fish were greater by far than before the war, and the catch per day of the trawler had increased materially. Then, just to complete the second experiment, and to prove that the results of the first experiment were adequate, all the nations around the North Sea began to fish more heavily than ever before. Once again, as after World War I, several of the fish populations of the North Sea and the yield from them have begun to decline. The main difference so far has been that the fishing intensity is much heavier this time, and the decline in the fish populations has been much more rapid than after the first World War.

4. Certain rivers in Norway had been producing salmon at a fairly steady rate for the past 100 years. Then commercial fishing was stopped for a time on some of the rivers as an experiment. The number of salmon increased tremendously. Now, fishing on those experimental rivers is producing steadily from 10 to 30 times the weight of salmon each year that they had produced annually in the 100 years preceding.

The number of examples of this kind of thing could be extended. I cite the above four cases because in each instance the variation in the abundance of the affected population of fish, the amount of fishing effort used, and the yield of the fishery has been quite closely followed by scientists, and a good deal is known not only about what happened but also why it occurred.

Law of Fish Populations

From these vast experiments involving literally billions of fish, hundreds of thousands of man-days of labor by fishermen, and the steady year-round effort of dozens of scientists through two full generations has emerged a natural law of populations which is elemental in its simplicity and yet is of the greatest importance to every fisherman in the world, for, so far as we know, it is a general law that applies to all fish populations and to all fisheries that work upon them. It is this:

Before a fishery starts, the virgin fish population is in a state of balance with nature. It is at its maximum size and is being held there by the fact that its rate of mortality through natural causes just exactly equals the rate of increase through breeding and growth.

The fishery begins and, so far as the fish stock is concerned, the fishery is just another predator causing added mortality to the stock. The stock of fish decreases in total size, but, at the same time, the rate of total replacement of stock picks up because of more food being left for those fish remaining, less fish being left for natural predators, and so on. As the fishery increases in intensity, the yield from it becomes greater, the total size of the fish population continues to decrease, and the rate of total replacement of the population continues to grow.

Point of Diminishing Returns

But this cannot go on forever. At last there comes a point where the fishing intensity becomes so great that the fish population is no longer able to meet it by increased reproductive ability. When the fishing intensity continues to increase beyond this point, the actual yield from the fishery begins to decrease, and it continues to decrease either until the fishery is relaxed or it becomes uneconomical to fish any harder. A number of examples of either situation could be cited.

Briefly put, for each fish population there is a point of fishing intensity which will result in maximum production year after year from that population. If the fishery is less intense than this, it is a wasteful fishery, for fish that could be used by man are dying from natural causes. If the fishery is more intense than this point of maximum production, it is equally wasteful. Less fishing would actually produce more pounds of fish from the fishery.

If the problem is solely one of producing a maximum quantity of food out of the sea, then the following course of action is a logical one:

Each fishery should be encouraged to grow until the maximum point of production has been reached. Beyond that point, the amount of fish which the fishery should take each year should be held at that quantity which will keep the level of the particular population of fish at the height which will permit the maximum annual catch of fish year after year. There is no sense in restricting fishing effort until the point of maximum production has been reached; after that point has been reached, the fishing effort should be closely regulated so as to assure the ability to take a maximum crop next year, and the year after.

That is where the rub is. The economic situation of the world; the increasing need for animal protein food; the tendency to use land area for producing food of vegetable origin at the expense of raising food of animal origin; the situation which drives nations to seek self-sufficiency in all economic fields where that is possible—all of these factors lead to the development and growth of fisheries, indeed their over-development and overgrowth. The situation now in Western Europe is a case in point. There a number of nations are pushing forward, as national economic policy, the increase of their trawling fleets at a time when the probability is well-realized that the known fishery resources available to trawlers off Western Europe are decreasing in quantity through over-fishing.

The difficulty is that there is no way to put the brakes on an international fishery once its growth has started. The land area of the world is split up into scores of separate areas which have more or less independence of each other. The laws governing the agricultural production from these separate land areas are made locally within each area. They are flexible and can be changed quickly if new conditions in any area require change. There is little or no legal relation between the manner in which a farm in a Norwegian valley and a farm in Maine are managed. Contrast this situation with that prevailing in food production on the high seas. The fishermen of Maine and those from Norway, once beyond the territorial waters off their coasts, enter the domain of a single, identical system of law—international law.

That three-quarters of the world surface which is called the high seas has come to be considered as common ground for all nations. There are no special rules governing any one segment of it unless all nations interested in that segment are in agreement upon the special rules.

Jurisdiction of Nationals

As a consequence, the laws that apply generally to the high seas are mainly aimed at the objective of maintaining rights to freedom of navigation. Any addition to this body of laws is scanned primarily to see whether or not it is going to set a precedent which may sometime in the future impede the right of free navigation. The result, generally speaking, is that each nation retains sole jurisdiction over its vessels and its nationals on the high seas and no other nation is permitted to exercise any jurisdiction over these vessels and nationals while they remain on the high seas, except where special treaties between those nations have been concluded.

The result of this upon the fisheries has been that there has been very little incentive for nations to get together for the purpose of conserving their fisheries that lie in international

waters. Should any two or three nations get together for the purpose of putting the brakes on the expansion of one of their fisheries which is expanding beyond the capacity of its fish stock to produce, then the fishermen of a fourth or fifth nation will flock to this area to fish.

A case in point is the stock of halibut in the Northeast Pacific. These stocks of halibut have been built up through joint management efforts of Canada and the United States until there are few areas in the world where a catch of valuable fish can be taken so readily and easily. This management scheme has worked successfully because of geographical isolation. Until rather recently it has been difficult for fishermen from far distant countries to come and fish these rich banks. This technological difficulty is decreasing daily.

In the North Sea where the fishermen of a dozen nations can work, one about as easily as another, it has not been possible for any two nations to agree to a constructive step in fisheries management and then exercise the jurisdiction that would be required to put the management program into effect. Agreement between a dozen nations is not easy to obtain. Consequently, there has been no effective management of the fisheries of the North Sea. The fishing fleets there continue to expand, the stocks of the most valuable kinds of fish there continue to decrease in size, and the yield from them actually decreases in spite of the increase in the number of fishing vessels and their efficiency of operation.

Fish Quota Systems

What is the cause, and how can the effect be diminished?

One of the causes lies in the word "quota." Each fish population, as we have seen, can produce so many pounds of fish each year and still stay in shape to produce the same number of pounds next year. This is a natural law that we do not know how to get around or modify in any respect. In speaking about this, we say that there is a quota which can be safely taken each year, and, if more is taken, then there will be a smaller quota to be taken next year, and so on.

But when you say quota, fishermen immediately begin to wonder what share of that quota they are going to be permitted to take each year. There is a fear immediately that one's quota of the over-all quota will not be large enough. There is a fear that three or four other nations will combine against your nation to vote that they will take 95 percent of the total quota and leave you with 5 percent or less. All the selfish side of our nature is brought to bear to see that we can get as much of the general quota as is possible; all the suspicious side of our nature is alerted to see that other nations do not deprive us of our due share.

Since what any one nation thinks is its due share of a quota is generally larger than what any second nation thinks is the first nation's due share, few treaties using a quota system for the management of a fishery are signed, in spite of the fact that laws of nature dictate this as the natural way of managing the fishery.

The convention between Canada and the United States for the protection of the halibut fishery of the Northeast Pacific avoids this problem completely. This fact has generally been overlooked and its importance in the great success which that convention has brought forth has not been emphasized.

This convention set up an International Commission to find out through scientific investigation why the yield of the halibut fishery was falling off. The Commission found that there was over-fishing, and that the fishery should be reduced. But instead of saying that the Canadian fleet should be reduced by 10 percent and the United States fleet be reduced by 20 percent, or vice versa, the Commission took the straight course dictated by the biological facts it had ascertained.

It found that the halibut stocks could yield just so many pounds in any one year and still leave enough fish for next year. The Commission took the view that its function was to build up the stocks of halibut so that a maximum poundage of halibut could be had from the banks every year forever, and that this was its sole purpose. Consequently, it put a total over-all quota on the amount of halibut that could be taken in any one year. It did not say who could take any part of this quota; it merely said that, when this total quota was taken, everybody had to stop fishing for that year.

This did not contribute to, nor detract from, any selfish interest that either the United States or Canada had in increasing its relative share of the fishery. The action of the Commission simply avoided this question. During the fishing season the fishermen of both Canada and the United States fished as hard as they could, or as hard as their particular market conditions would permit. Some years Canada caught a larger share of the total than it had in former years; some years the fishermen of the United States caught a larger share than they had formerly taken. Who got the fish was the responsibility of the fisherman; the sole responsibility of the Commission was to see that there was a maximum quantity of fish there to be taken.

And what has happened? The Commission started out with badly depleted halibut resources. It set the first quota sufficiently low that there would be not only an ability to catch that many fish the next year, but there would be a little left over and above that amount. Halibut on the banks were treated as money in the bank. A little was added to the capital in the bank each year. Consequently the entire halibut industry of both countries found that, instead of living on its capital, it was now living well within its interest yield from that capital; and, as the capital increased, the interest yield also increased.

Each year the Commission, carefully watching the condition of the stocks of halibut on the banks, has been able to say that the total catch next year can be a little greater than this year. In the course of less than 20 years the annual quota has been raised from 44 million pounds per year to about 56 million pounds per year.

International Convention

Notice very carefully that it has not been the quota of the United States or that of Canada that has been raised each year. It has been the total quota; first come, first served. The result has been that, although the relative shares of the United States and Canada may and do vary from season to season, they do so under the operations and conditions of free and fair enterprise, and not because of any fiat allocation of the Commission. Furthermore, the fish are now so abundant on the banks that it takes hardly a third the amount of effort to catch 56 million pounds now that it took to catch 44 million pounds 18 years ago.

This international convention and the work of this Commission has done nothing at all to protect the stocks of halibut off the coast of the United States from being exploited by Canadian fishermen; neither has it contributed in any measure to protecting the stocks of halibut off the Canadian coast from being exploited by fishermen from the United States. But the total halibut stock has been protected from over-exploitation by the fishermen of both countries; and it has grown, thrived, and yielded increasing crops to the fishermen of both countries. This is the kind of protection which produces profit for everyone concerned.

This is the kind of protection that we are desirous of extending to all of the fisheries in which United States nationals are involved, as they come to need such protection. We can do this now, under international custom and usage, so far as we and other nations may exercise jurisdiction over fishermen in the high seas in every case where we and other nations agree by treaty or otherwise for such purposes. This lies at the base of the Presidential Proclamation of September, 1945. The desire is to extend to fisheries of the high seas generally

the possibility of management for the purpose of conservation, which has proved to be so profitable in the halibut fishery.

Here we run up against exactly the same problem that the Halibut Commission faced in its simpler two-nation problem. If we or other nations attempt to say which country shall get what proportion of the yield of these fisheries, dissension will arise and we shall be able to reach no agreement for the conservation of the fisheries. Hence the logic of taking the same decision as the Halibut Commission did: To say that our first responsibility is to protect the fish stocks themselves from overfishing.

We seek to establish the principle that countries off whose coast a fishery lies, and countries which participate year after year in a fishery in a major and consistent manner have the primary interest and responsibility in keeping those stocks of fish at the level of abundance that would make possible the maximum yield from them year after year. With responsibility must go authority, to carry out that responsibility.

The authority which is required is the means to place all fishermen who are operating in any particular fishery under exactly the same regulations without regard to nationality, so long as those regulations are for the purpose of conservation, and for that purpose only.

This is a general policy that we would like to see adopted by nations generally. The Northwest Atlantic Convention we are proposing to negotiate this month is a special instance of the general problem, but it is entirely consistent with the general problem and can be used to illustrate it.

In the preliminary draft of this convention, which will be the basis for discussion at the forthcoming conference, the area of the Northwest Atlantic is divided into four sub-areas which are separated more or less geographically, biologically, and politically so far as the nations who fish them are concerned. Sub-area 1 is the vicinity of Labrador and Western Greenland; sub-area 2 is the area adjacent to Newfoundland and the Grand Banks; sub-area 3 is the banks off Nova Scotia; sub-area 4 is Georges Bank and the adjacent high seas.

These four sub-areas are in large part distinct biologically for the species which are covered by the proposed convention. For instance, the effect of regulation of the haddock fishery of Georges Bank will have little or no effect on the stock of haddock on the Grand Banks, since the haddock do not move back and forth between these two areas to any great extent.

Consequently, the four sub-areas have been separated administratively in the draft convention. For each separate sub-area, a special panel of commissioners, drawn from the members of the over-all commission, is provided. It is these four panels which will have the power of formulating regulations, each for its own particular sub-area. The over-all commission will have power only to formulate research programs and to review regulations to make sure that the regulations of one panel area do not conflict or interfere with the regulations in another panel area.

Thus, the regulating power rests with the panel area commissioners nearly entirely, and that is where nations will wish to be represented so they can see that their fishermen will be treated fairly.

In the over-all area seven nations fish fairly regularly. Others have fished before, and may want to again. But there is no one of the four sub-areas in which all the nations invited to the Conference consistently fish. Therefore, in saying who shall have the authority to formulate regulations, we have suggested that only those nations which are contiguous to a sub-area or which have a substantial and consistent fishery in a sub-area shall be represented on the panel of the sub-area.

Draft Convention

Further, in order to protect the interest of the countries adjacent to the area, we have suggested that no regulations in any sub-area should be put into force without the concurrence of the contiguous country or countries, which will, of course, be represented on the panel of the commission.

Thus we have a set of four panels who will have the authority to make regulations. Each fisherman will be represented in the area where he usually fishes by an official from his country who will be watching out for his particular interest.

But it is a well-known historical fact that the fisheries of this area of the world are ever-changing in their national composition. Fishermen from the United States, for instance, have in times past fished extensively in all of the sub-areas. Then, in recent years, United States fishermen have restricted their efforts mainly to the Georges Bank area. But just recently, because of scarcity of fish on Georges Bank, fishermen from Massachusetts have been going again to Banquereau in increasing numbers, and United States fishing efforts in the Newfoundland area have picked up again. It is an ever-changing fishery fluctuating as market conditions in the several countries change. Leeway has to be left for the dynamic nature of the fishery.

This we have allowed for in two ways:

1. Fishermen of all of the High Contracting Parties will be subject to exactly the same regulation in any one panel sub-area.

Thus, a Dane who thought to change his luck and try a trip on Banquereau instead of off Jakobshavn would have to fish under exactly the same regulations on Banquereau as would the Canadians and others fishing there, even though there were no Danish commissioner at that time on the panel of sub-area 3 that made the regulations.

2. If the shifting fortunes of the fishery result in the nationals of one country fishing consistently and substantially in one of the sub-areas where they had not fished at the time the panels were formed, then that nation would have a right to have commissioners on the sub-area panel.

In the draft convention, it is provided that the present line-up of national interest will be followed and be maintained for three years. After that, if a nation has established a substantial interest in a fishery in a sub-area where it was not represented originally on the panel, it may be admitted to that panel. The composition of the panels, after the initial three-year period, can be readjusted annually.

Here we come to a type of legal machinery, then, that is capable of promoting the conservation of the fishery resources of the Northwest Atlantic area outside the territorial waters of the adjacent countries. Nations will be represented in accordance with their interests. Representation can change as national interests change. Nothing is said about how catches or quotas will be distributed among nations. The purpose, instead, is to see that the resources are kept in shape so that maximum catches can be had from them consistently.

Nations have differed for centuries as to how the yield of a fishery should be divided among them. Nothing new has developed that affects these economic arguments generally. There is little hope but that each of these arguments will have to be settled separately as they come up, as have similar arguments in the past.

The new factor that has arisen recently that affects high seas fisheries generally is the increased efficiency and mobility of the units that work in the high seas fisheries. If the activity of these units can be directed into proper channels, they can increase vastly the total production of the sea; if they go uncontrolled, as has been the practice of the past, they will lower one after another the food-producing potential of the major high seas fishery resources.

It is the control of this new factor in high seas fisheries at which we aim. The protection we want for the ocean fisheries is protection from overfishing to the end that our sons and our sons' sons can profitably harvest the sea as have we and our fathers before us.

Canner-Grower Relations

Conference Conducted by N.C.A. Raw Products Bureau

REVIEWING OUR CONTRACTS

By Marvin P. Verhulst,
Executive Secretary,
Wisconsin Canners Association

The grower contracts with which this discussion is concerned are those for the growing of annual vegetable crops for canning—peas, corn, tomatoes, snap beans, lima beans, beets, carrots, spinach, and a few others. These contracts are reviewed each year in the sense that the price for the crop must be determined, but there is need now for a more extensive and thorough review than that, a need for examining all of the clauses and provisions of the contracts.

One of the reasons why the canner-grower contracts have not been given as much attention as they deserve is because minimum grower prices and certain terms in grower contracts were established by government agencies during the war years, and most contract forms remained unchanged during that period. Since the war, growers have been much more critical of these contracts and canners have become much more aware of the importance of good grower relations.

The most extensive study of canner-grower contracts we know of has been that undertaken at the University of Wisconsin. In the College of Agriculture, a study of Wisconsin pea grower contracts was begun in 1946 and is reported in Bulletin 475 of the Wisconsin Agricultural Experiment Station. A comparable study covering Wisconsin sweet corn, snap beans and beet contracts has also been completed at Wisconsin and the bulletin reporting this study should be off the press in a few weeks. In addition, a study has been published recently by the University of Wisconsin Law School on the legal aspects of canner-grower contracts.

The most important point emphasized by these studies is that canner-grower contracts are generally lacking in mutuality. In ordinary language, this means that contracts are too one-sided. They have been drafted by the canner for his own benefit and his own protection and without consideration of the grower's interest. Typical of this situation are clauses which give the canner alone the right to cancel the contract, or which give the canner the right to refuse to accept the crop for a variety of reasons, or which make the canner the sole judge of the quality, and grade price, of the crop. It is noted in these studies that canners seldom enforce clauses against the grower and, in fact, the study of the legal aspects of these contracts pointed out that many such provisions are unenforceable. For instance, the courts have held that even though a contract specifies that the canner's determination of the grade shall be final, the canner may not make an unreasonable grade determination. Likewise, the clause giving only the canner the right to cancel would be interpreted by the courts to give the grower the same right to cancel.

The clauses giving the canner the right to refuse to accept the crop have been a principal target for criticism. For instance, the question is asked, "Why should the grower be penalized when the canner has contracted for more than he can handle?" Or, "Why should the grower suffer loss if the canner and his employes cannot agree on wage rates or working conditions?"

The argument from the grower's standpoint is that he has had nothing to say about how much acreage the canner contracts in relation to his plant's capacity; he generally has had nothing to say about when the crop shall be planted or harvested; and since the canner alone controls these factors, any loss from skipped acreage or tonnage which the canner cannot process should be borne by the canner alone. The argument in the case of a labor dispute is that if a plant is closed down because the canner's wage rate is too low, or working conditions are bad, the canner again should bear the loss because he is somehow at fault.

The difficulty with these arguments is that no one has yet been able to figure out an adequate definition for over-contracting and, in the case of a labor dispute, there is at least a fair presumption that some of the union's demands may be unreasonable. The Wisconsin bulletin on pea grower contracts suggests that over-contracting be defined in terms of a planting schedule measured by heat units, but there are so many other factors involved that this suggestion can not at present be taken very seriously.

A number of relatively less important points have been noted in these studies and suggestions made for improving contracts. One of these is that the field on which the crop is to be grown should be definitely identified in the contract. It is suggested that this be done by reference to range and section number with a rough sketch map forming part of the contract. Actually, this is more for the canner's benefit than for the grower's, and the Wisconsin canners who have used this method find it quite workable. Not only is the canner protected if the grower has more than one field of the particular crop, but different fieldmen are readily able to locate the field so that insecticide and disease control applications are less likely to be made on a competitor's contracted acreage.

Regarding treatment of the crop for insect, weed or disease control, the recommendation is made that the grower's consent be obtained before application is made if any part of the cost is to be charged to the grower. This appears to be a reasonable suggestion, although some contracts at present do provide that the canner can charge such cost to the grower without consulting the grower in any way.

As to the date of payments for the crop, these studies have suggested that the canner pay the grower about 60 days after delivery, and if payment is delayed beyond that date, the grower should be paid interest until the date of final payment. Here the argument is that the canner should not be permitted to operate his business on the grower's money, particularly when he pays cash for his labor, his cans and most of his other supplies. Grower contracts at the present time call for payments running anywhere from September 15 to March 1 of the year following.

On charges for seed or plants furnished the grower, these studies recommend that the canner charge a price which closely approximates his actual cost rather than to furnish these at less than cost and reduce the price for the crop accordingly. In the case of peas, this may be a significant factor and the argument is made that the full seed charge for peas gives the good grower a better return for his better crop, whereas the free seed or reduced seed contract requires the better grower to absorb part of the cost of the seed loss incurred by a poorer grower. In spite of this recommendation that the contract contain a full seed charge, it is also recommended in the case of peas that in case the crop does not produce a gross return of at least twice the amount of the seed charge, the seed charge should be reduced so that it will not exceed half of of the gross return for the crop. The proponents of these two suggestions admit they are somewhat inconsistent but argue that they will make for better grower relations. From a practical standpoint, it should be noted, however, that in many areas the great majority of growers prefer a free seed or a reduced seed contract and, in several cases in Wisconsin where canners have tried to follow out this suggestion, they found they had to shift back to a free seed or reduced seed contract in order to get acreage.

A final suggestion that was made in these studies was that instead of including in the contract itself the list of services which are available to the grower together with the accompanying charges, they should be set forth on a separate piece of paper which could be distributed to growers at some

date after the contract had been signed. In the case of a pea contract, this would relate to such items as the use of equipment for planting seed or applying fertilizer, the use of mowers or harvesters, the charge for the inoculation of seed, the charge for hauling vines from the field to the viner, and the charge for labor furnished in harvesting the crop or in pitching or stacking the vines.

The advantages of listing these charges on a separate piece of paper is at best dubious and the disadvantages are very substantial. These dubious advantages are that in case the canner doesn't know what these charges will be at the time he makes his contract, he can decide that matter later; and by listing these charges on a separate piece of paper, his contract may be kept a little shorter. The disadvantages are, however, that the grower is frequently very much interested in what those charges will be and they may well constitute an important consideration in the grower's decision to contract to grow the canning crop. Since that is the case, this schedule of charges should definitely be a part of the contract itself. Furthermore, there is the serious disadvantage of having a separate piece of paper in that it becomes easily separated from the contract; and if it is attached to and is intended to become part of the contract, it makes the contract longer than it would have been had the schedule of charges been listed in the contract in the first place.

The study of the legal aspect of canner-grower contracts in Wisconsin covers a number of points, but it may be of particular interest to mention one: The property rights of the canner in the crop before delivery. In the most common type of canner-grower contract, the parties are designated as buyer and seller; that is, the grower agrees to sell and the canner agrees to buy the crop, and the title to the crop does not pass to the canner in such case until the crop is actually delivered into his possession. In some contracts, however, the canner has attempted to reserve a lien on the crop at least to the extent of his advances to the grower for seed, fertilizer, and other materials and services. This study indicates that most of these attempts to reserve a lien, made before the crop is planted, are ineffective, and the only effective way the canner would have for obtaining a lien would be to secure a chattel mortgage on the crop after it is growing and then have that instrument recorded.

Still another form of contract has been used in recent years in which the canner and the grower agree that the title to the seed and the title to the crop produced therefrom shall remain in the canner at all times, and that the grower is merely one who has possession but does not have any title or property rights in the crop. This is called the bailment type of contract; under it the grower agrees merely to furnish land, facilities and services for producing a crop which belongs to the canner at all times. The validity of this type of contract has not yet been definitely determined by the courts, but it may be a desirable form of contract to use in some cases.

In an effort to implement some of these suggestions from these studies, an organization of canning crop growers in Wisconsin recently has undertaken to draft a suggested form of canner-grower pea contract. It is significant to note that although growers sometimes complain about the "fine print" in the contract, the form suggested by this grower organization is more detailed and contains more fine print than any canner-grower contract I have so far encountered. This contract, however, is well organized and has margin headings to identify the different paragraphs in the "fine print" so that it may be a useful model to canners who are revising their contract.

This contract form consists of four pages, but only the first and last pages are to be filled in by the fieldman. In addition to the name and address of the grower, the first page calls for the acreage, the variety, the number of bushels of seed per acre, and the viner station to be inserted in one blank and, in case the grower is a share tenant, the contract is to be filled in to show the landlord's name and the percentage of the receipts for the crop and the percentage of the silage that belong to the grower and the landlord, respectively.

The fourth page of this contract contains a diagram on which a sketch map is to be made showing the location of the pea field together with the township, range and section. In addition, the fourth page of this contract calls for information about the field which the fieldman should have if he is to apply intelligently the recommendations of agricultural science in producing a crop of vegetables for canning. The questions here include the type of soil, topography, the crop history of the field, a record of the fertilizer, lime, and manure applied to the field in recent years, and information as to the weed condition in the field.

At the very end of the form is a space to be filled in at a later date which is not really a part of the contract proper but does afford a convenient place to record results of soil tests from the field after such tests have been made.

The 20 paragraphs on the second and third pages of the contract form have the following marginal headings which give some idea of the scope of the contract: Grower's duty, Canner's duty, Sampling and grading, Operation of tenderometer, Fieldman's duty, Quality production, Early or late maturity, Justification for non-performance, Skipped acreage, Grower negligence, Cancellation, Crop risk and seed adjustment, Cost deduction, Insect controls, Ensilage, Seed specification, Settlement of disputes, Grower's agent, Time, and Service and equipment costs. Some of these paragraph titles are not too descriptive in themselves and a rather interesting provision is set forth in the paragraph referred to as early or late maturity; this is a provision that should some few acres mature earlier or later than the majority of the acreage when volume is insufficient to permit economical operation of the plant or the viner and it is for the best interests of the canner not to operate the viner or the factory for these few acres, the canner is not required to accept the delivery from the grower but will instead make an equitable adjustment with the grower.

It also should be noted that this contract is drafted by a grower organization and is intended to give recognition to the grower organization by requiring that organization's approval and by recognizing that organization as the agent of the grower in all matters relating to the contract.

No review of canner-grower contracts at this time would be complete without some reference to the decision handed down by a U. S. Circuit Court of Appeals last month in which the court held that the canner was not entitled to a decree of specific performance even though the grower violated the contract, because, as the court said, the contract was "too hard a bargain and too one-sided an agreement."

The facts in this case were that the canner entered into a written contract with two farmers to grow 15 acres of carrots on their farm. The prices specified in the contract ranged from $23 to $30 per ton according to the time of delivery and at the time these carrots were to have been delivered, the $30 per ton price applied. At that time, however, the open market price for carrots had risen to $90 per ton and the farmers informed a representative of the canner that they would not deliver their carrots at the contract price. Instead, the farmers sold most of their carrots to a neighbor who offered them on the open market. The canner brought suit against the farmers who were under contract to grow the carrots and also against the third farmer who had purchased these carrots to offer them on the open market, and the canner asked the court to compel specific performance of the contract. This the court declined to do on the ground that the contract drives too hard a bargain on the farmers.

To understand this decision, a little history of our judicial system is almost necessary. We inherited from England a system of dual courts, one called Courts of Law and the other called Courts of Equity. The Courts of Equity had sprung up in England

to grant relief in cases which Courts of Law did not cover and in cases where legal rules were harsh or arbitrary.

Although we don't have separate Courts of Law and Courts of Equity in this country, the rules which our courts follow will be either the rules of law or the rules of equity, depending upon the kind of case presented to the court. In the case under discussion, the canner had asked for a decree of specific performance and this is something which could be granted only in a Court of Equity, not in a Court of Law. Therefore the court in making this decision was guided by the rules of equity which provide that no assistance will be given a party who has obtained an unconscionable bargain. This is not to say that if an action for damages had been brought by the canner against the farmers who violated the contract, the canner could not have recovered because such an action would have been governed by the rules applicable to a Court of Law, and the decision repeatedly points out that the contract is not unlawful. The effect of this decision, therefore, is really to say merely that the canner is not entitled to the particular remedy he sought for the breach of the contract, although he may be entitled to another remedy, such as a judgment for damages.

The portion of this particular canner-grower contract which the court considered unconscionable was a provision that although the canner was excused from accepting the carrots under certain circumstances, the grower was not permitted to sell his carrots elsewhere even under such circumstances without the canner's permission. The court also noted that the contract contained a penalty of $50 per acre for violation on the part of the grower but no penalty for violation on the part of the canner. So far as we know, these provisions are not generally found in canner-grower contracts, and there have been many other instances where courts have granted a decree for specific performance where the canner sought to prevent the grower from disposing of the crop in violation of the contract.

I would like to make a few general comments regarding grower contracts before concluding this review. The canner-grower contract probably is the most important single element of canner-grower relations. If it fulfills its function properly, it should set forth all of the legal rights and obligations of the canner and the grower with respect to the crop covered by the contract.

Some contract forms have been merely a memorandum of the amount of acreage and prices to be paid with the balance of the contractual arrangements made orally or dependent on custom. This is likely to be unsatisfactory to both the canner and the grower when unforeseen circumstances arise. The ideal contract is one which sets forth the rights and obligations of both parties in such a manner as to preclude any misunderstandings under the wide variety of circumstances which may affect the contract.

Canner-grower contracts have been subject to more unfavorable criticism than any other single aspect of canner-grower relations. The principal criticism has been that they have been drawn with only the canner's interest in mind and are unfair to the grower. An impartial review of canner-grower contracts would probably find this criticism justified in many cases.

The following points warrant particular attention in drafting or revising grower contracts:

1. Contracts for crops to be delivered at a future date are generally not enforceable unless they are in writing and signed.

2. Penalty or forfeiture clauses against the grower which the canner does not actually enforce should be omitted from the contract. Failure to enforce them is likely to be treated by the courts as a waiver of the right to enforce them. A contract whose "bark is worse than its bite" merely "gives the dog a bad name."

3. So far as possible, for every right reserved to the canner a corresponding right should be given the grower:

a. Canner's right of entry on the field should be balanced with grower's right of access to weighing and grading platform.

b. Both parties should have the right of cancellation before a given date.

c. Both parties should be excused from performing when conditions make performance impossible.

4. Contracts should be so drawn as to entitle the canner to specific performance in the event the grower breaks the contract; this contemplates that the contract is equitable and that the canner has not taken undue advantage of his position as drafter of the contract. If the canner cannot enforce the contract by specific performance, he is deprived of the only effective remedy in most cases.

COMMENT ON GROWER CONTRACTS

By H. Thomas Austern, Association Counsel

As a possibly presumptuous postscript to Mr. Verhulst's splendid and informative paper, I should like to take the liberty of making three points. The first two are more or less legal; the third lies more in the area of canner-grower relations.

In the first place, to many of us in the East the *Carrot* case, to which Mr. Verhulst referred, does not appear to be a wholly objectionable decision. For in that case the Third Circuit Court of Appeals vigorously reaffirmed the rule that a canner could get "specific performance" of a fair grower contract. By specific performance, I mean the possibility of getting a mandatory order from the court requiring the grower to deliver the crop to the canner and prohibiting him from selling it to anyone else. As you know, ordinarily where a man obligates himself to do something and then fails to do it, the other party's only recourse is to sue him for damages. But in the case of certain unique things, the courts will order the seller to deliver the particular thing rather than merely to pay damages.

This is true where the sale of land is involved or some irreplaceable object such as an oil painting. It is likewise true—and the *Carrot* case recognized—that a seasonal crop in a particular locality cannot readily be replaced; and hence the courts will in a proper case order the grower to deliver the contracted crop to the canner.

As a second comment, I should like to suggest that in preparing revised grower contracts you remember the rule that any ambiguity in a contract is likely to be resolved against the man who prepared it. This is true of an insurance policy prepared by an insurance company, and I think will be held equally true of standard grower contracts prepared by canners.

In this same connection, I know that it will not be forgotten that the anti-trust laws apply to contracts for the purchase of all commodities. It is possible to distinguish between agreeing upon the *form* of a contract as against agreeing upon its terms, such as price, quantity, etc. But it is not advisable wholly to forget the application of the anti-trust laws in this field.

My third point is probably a matter of grower-canner relations. Mr. Verhulst referred to the matter of fine print in these contracts. I wholly agree with him that it should be avoided.

It was once said that every statute is both a political as well as a legal document. In a large sense this is true of every contract. A good sales contract must embody not only a correct legal statement but some elements of salesmanship—the most essential one being that it can be understood by the buyer without recourse to a battery of lawyers. Every grower contract should embody the essence of good canner-grower relations. This means, I think, that the contract should be in plain English, preferably in *Saturday Evening Post* style. I hope that whatever revisions you undertake, you will always keep this in mind.

CONTACTS WITH GROWER ORGANIZATIONS

By J. P. King,
Birds Eye-Snider Div.,
General Foods Corp.

Every canner has occasion to meet and work with farm organizations. The extent to which this contact develops naturally varies a great deal depending on location, type of plant operation and company policy with respect to objectives in grower relations. As an industry we should do more to acquaint growers with our problems, to learn about and understand the growers' problems and to cooperatively, with the growers, attack problems of mutual interest to both. This can be done most effectively through a proper working relationship with farm organizations. I say this because practically every farmer belongs to at least one and usually several farm organizations. These groups are interested in many of the problems which concern us as individual canners or as an industry.

Generally, the leadership of these groups is experienced and authorized to speak or act for the membership on all farm problems in which we have an interest. Regardless of whether or not we participate, farmers have been and will continue to be active in attacking these problems. The greatest opportunity for successful solution exists where the issues are discussed at the local level, that is, in the community where the plant is located and the membership of a particular farm group is composed of the firm's friends and neighbors. Here the problems are clearly defined and specific. The results of successful solution of these can be most readily recognized and enjoyed by all concerned.

Most activities of farm organizations can be classified in one of those groups, namely educational, legislative, or collective bargaining. By far the greatest majority fall in one or the other of the first two. Likewise, our basic problems of mutual interest with growers can be solved through education or legislation. If we are doing an intelligent job on these, there is much less chance that we will be confronted with an organized group concerned only with collective bargaining.

We are vitally interested in and give attention to crop production problems requiring research. Likewise, farm organizations study the research needs of canning crops in much the same manner as they study the research needs of all other crops and livestock. Both canners and farmers make recommendations to, advise with, and check the progress of the agricultural experiment stations. Yet too often the work is not fully coordinated. Much more progress can be made if canners and growers work cooperatively on these projects. Most experiment stations would welcome this type of approach.

Farm organizations and certain public institutions and agencies have splendid facilities for educational work with farmers. We frequently can use these channels to disseminate information of value to both ourselves and the growers. Likewise the most effective extension meetings are those planned and conducted jointly by canners, representatives of farm organizations and the County Agent. This participation assures that a practical and timely program will be developed.

Contacts with growers' organizations concerned only with collective bargaining are of course much more difficult. We as an industry should accept the fact that it is each grower's privilege to bargain individually or as a member of an organized group. However, we should understand that with organization goes responsibility. This can be pointed out to the grower when he is considering collective bargaining. Too often we overlook the fact that each individual grower and every farm organization has a public relations job to do very similar to ours. Therefore we can make certain demand of them. In any event, we must make our contacts direct and specific. Bantering back and forth through the newspapers does neither party any good. If and when it becomes desirable to publish information relating to matters between each other, both canners and growers must make the facts so published timely, accurate and complete.

Volumes could be written or spoken both pro and con on this subject of contacts between canners and growers' organizations. However, it would all add up to the one simple fact that through acquaintance comes understanding. There exists a challenge to all of us to do a better job of working with farm organizations. Let's meet that challenge.

AN AGRICULTURAL HANDBOOK FOR THE FIELD STAFF

By M. W. Mitchell,
The Larsen Co.,
Green Bay, Wis.

In entering into a discussion of this type, it is perhaps advisable to first give consideration to the basic problem or objective. Since our program this afternoon is devoted to "Special Aspects of Canner-Grower Relations," let's consider for a moment that by holding such a round-table discussion as this we are recognizing a need for *improved* canner-grower relations. We are aware of the importance of the grower to us.

Is not the growers' importance such as to merit a well-planned and organized program aimed at improving such relations? Does it not call for our having a sound constructive agricultural policy—a fair contract—fair dealings—modern services—adequate and qualified field representation to offer? Surely, all these are recognizable as "must" items. All right, let's say we have these elements of an improved grower relationship. Do our growers know it? Is it not time to recognize the sales nature of the job of improving grower relations—the sales nature of the fieldman's job all through the year?

Yes, the field job involves salesmanship—a modern up-to-date type if you please—salesmanship that is honest, thorough, informed, effective for the canner, and of real service to the grower. The fieldman is selling when he is contracting and also when he is advising the grower on the how, when or why of a better job of planting or cultivating or harvesting. His salesmanship can be modernized and made more effective if he is provided with modern sales tools—a handbook or portfolio, may well be one of these.

There cannot be any one kind of handbook or—as some of us prefer to call it—sales portfolio—to fit all needs. There is no particular reason why there should be, so long as it contains what is needed. Let's consider what we would like to have it help us do.

Do you care or are you concerned about the kind of company with whom you have business deals? Do you think it concerns you whether or not the outfit you choose as a sales outlet for your products is an established concern or a fly-by-night operator? Are you interested in knowing something of its size, ability to perform its contractual obligations? Of course you are—isn't it likely that the growers are also? Why not set down in printed form a few of the pertinent facts—your size, facilities, products and personnel. Sell your company. Put in statements of your agricultural and grower relationship policy.

The fieldman is the key man in the contact with the grower. He is part of your organization—perhaps a description of the organization—maybe even a line or two under a photograph can convey the all-important idea that your organization is behind the fieldman, backing him up and providing him with information, service, experience, ability and know-how. This would help him do his job.

Ability to provide services to growers is a part of a canner-grower relationship program. Your labor procurement set-up—the planting, dusting and harvesting equipment you have available for grower service—custom work—may all be excellent

subjects for photographic presentation of interest to the prospective grower.

Canning crop know-how is important to the grower. You are engaged in variety trials work, in canning crop research. Do your growers know it? Do your fieldmen sell your trials program to the grower? How about a few photographs and an outline of your current work?

Now, how about the grower? Let's say we have a fair and equitable contract. Let's say the prices we are offering are such as to be competitive with other crops in terms of acre income. Let's say the seed and plants we furnish are the very best obtainable. We are up-to-date on all new developments and production practices and we have the know-how for profitable production of canning crops. Is there any reason why the growers should take all this on faith—on the fieldman's say so—without factual presentation? Is it fair to expect them to do so?

Contract Terms

Take the contract, for example. Perhaps it is long, certainly it is legally phrased, and most likely it contains some fine print. Your growers, and your fieldmen, too, would appreciate having its features outlined with a full contract on the left and on the right, brief statements of the grower's rights and obligations and your rights and obligations so there may be no question concerning them.

There are available and you can get and put in your handbook, the facts concerning canning crop yields, prices and acre returns by years in comparison with other and competing crops, both on a state-wide and national basis. In many areas such information is also available on a county basis. Information on plant and seed qualities, treatments and costs, new developments in weed control, outlined information on soils, fertilizers, planting methods, cultural practices, harvesting and grading methods are items of importance to the grower and fine material for your fieldmen's presentation of facts.

A handbook containing such items as have been mentioned can be a valuable guide and help to the fieldman. It can help him avoid errors of understatement or overstatement in his discussion with the grower. It can be a source book of facts that he and the grower need. It can provide for better understanding of the contract. It can be a constant reminder to the fieldman of the items in the training you have given him. It can provide him with an appeal to the eye supplementing his talk with growers—in other words, it can be a sales tool in his hands.

We find that in making up a portfolio ideas come up for inclusion in it that had not been originally considered. We find that it is very effective to ask each fieldman on the staff to prepare suggestions for inclusion in the handbook. Here are a few that our own fieldmen have suggested, items not yet included in our own portfolio and yet perhaps illustrative of what may be suitable material:

1. List of normal local range of planting and harvesting dates for all commonly grown crops.
2. Tabulations of recommended seeding rates, plant populations, spacing in and between rows, etc.
3. Tables of common land measurement, weight and measures.
4. Simplified methods of calculating contents of feed bins, hay mows, stacks, and silos, etc., calculating height, distance, areas.
5. Description and illustration of plant deficiency symptoms.
6. List of growers with columns of blank spaces for insertion by the fieldman of grower's requests for visits, inspection, future contracts, etc.
7. Feeding value table on pea vine ensilage, corn waste, etc., in comparison to commonly fed roughages.
8. General fertilizer recommendations concerning grade and methods of application.
9. Simplified outline of fertility elements and their role in crop production.
10. Sample rotations including canning crops.
11. Discussion of inoculation and its value to legume.
12. Samples of the company's grower letter.
13. Samples of kind of field records kept.

Portfolio Being Prepared

We are currently making up the portfolio our fieldmen will use this winter. A sample of it as prepared to date is here for inspection by those of you who may be interested. We have in it at the beginning, a page containing five very brief paragraphs about our company's history, facilities, raw products, sales and personnel. Then we have a series of photographs with a descriptive caption under each outlining the idea illustrated. These photographs include one of a representative fieldman and his car, another of our field mechanics and service truck, a line up of Hume harvesters, a close-up of one such unit mounted on a tractor, a line-up of heavy duty green crop loaders, a close-up of one of those mounted on a trailer, a photograph of tractors equipped with lima cutters, one of a Scott type beet and carrot topper, a photograph of dusting equipment, a pea stacker, a weed control sprayer and one of the more specialized planting units.

Next in our portfolio we have an outlined statement of our general agricultural policy wherein we recognize our business as having an agricultural base, recognize that our future is to a great extent dependent upon a continued reliable source of quality raw products, list some of the factors necessary to such a continued supply, make a statement of beliefs concerning the mutuality of our own agricultural interests and those of the community as a whole. We have an outlined statement of 10 points in connection with our policy in relations with growers. This contains a frank statement concerning the importance of the grower to us, what kind of relationships we desire and how through fieldmen, mutually advantageous contracts, pricing, etc., we aim at maintaining such policy. In Wisconsin we have an organization called the Cash Crops Cooperative. In our handbook we have a 10-point statement of our policy with reference to same.

Canning Crop Trials Program

Next we have an outline of our canning crop trials program, listing the objectives of our trials, the methods used, the crops included in our trial work, and examples of recent results of value to our growers. This is accompanied by photographs taken of the trial grounds. Next we have a statement of our labor procurement program and policy concerning same, accompanied by photographs of harvest crews. We have a statement concerning our policy in regard to seed, our treatment of seed, our testing of same, the prices we pay for seed as compared to contract charges and other such information. We have a statement concerning recent developments in weed control, specifically mentioning 2,4D and Stoddard Solvent, with a general statement offering detailed information on these and other chemicals on request. These are accompanied by photographs of weed control demonstrational work on our trials grounds. Each of our major crop contracts is included in the portfolio together with side by side, brief, outlined analysis on a paragraph by paragraph basis. One side of this analysis lists the grower's rights and obligations, the other our rights and obligations.

We also have listings of canning crop and other crop data. From the Bureau of Agricultural Economics data we have listed the national and Wisconsin 1947 and 1948 acreages of the major crops in which we are interested. From the Wisconsin Department of Agriculture file we have obtained and listed by years the yield per harvested acre, average price and gross values per harvested acre of snap beans, cucumbers, sugar beets, cabbage for kraut, corn, oats, barley, hay, canning corn, canning peas, limas, and beets. On a county basis we have listings of average yields by

years for each of the counties in which we operate, using corn, oats, barley and peas for canning in comparison. For each of the major crops we have a brief outlined statement of recommended practices for the production of such commodities at profit. Each such outline discusses soil, seed bed, fertilizers, planting, cultivation, harvesting and grading.

This handbook is, of course, subject to almost continuous revision. We think that is one of its advantages rather than otherwise. We think the importance of having management and the field staff prepare such a handbook cannot be overemphasized. It is surprising how much one learns in attempting to put down in black and white a presentation of facts considered of interest. For one thing, it becomes necessary to find out the facts and they are often surprising and eye-opening. Another thing—we canners talk glibly about our agricultural policy—of our grower policy. It's one thing to kid ourselves into the thought that the vague ideas we have represent a consistent policy that we follow. It's a horse of another color to put policy down in black and white. Doing a job like this, however, ties in all of the elements of the canner-grower relationship and itself may become a base for the desired improvement in such relationship.

SUPPLYING CUSTOM WORK TO FARMERS AS AN AID TO THE PRODUCTION OF CANNING CROPS

By J. D. Barnard,
Minnesota Valley Canning Co.,
Le Sueur, Minn.

The furnishing of equipment and personnel to the grower for the handling of his canning crop has become a very important problem for the canner during the last few years. Because my experience is with peas and corn, the thinking in this discussion is necessarily limited to these crops.

Back in the horse days it generally was not necessary to furnish help in harvesting these crops. Equipment was not specialized, grass mowers were considered tops for cutting peas, the wagon and team could still compete with the truck and tractor; and the combine and corn picker were not yet invented.

Since early in the 30's, there has been a definite trend toward the mechanization of all farming operations. The tractor has become an efficient source of power, and specialized equipment has been developed for harvesting peas and corn; and the grain combine and corn picker are working efficiently and economically.

In the Midwest area this trend has moved swiftly. Our farmers are very nearly 100 percent mechanized in all of their regular farming operations. Three- and four-bottom plows, 18- to 20-feet discs, four-row corn planters, six- to ten-foot combines, completely automatic hay harvesting and even four-row corn pickers are now quite common.

The result has been that no farmer has enough help to manually harvest peas and corn. He is learning that it is not necessary for him to do manual labor and he thus avoids planting crops which cannot be mechanically harvested.

The local labor which formerly did this type of work is no longer available. It would be impossible to harvest a crop of peas or corn completely with manual labor under existing conditions. It does not seem that that picture will change in the immediate future.

This trend toward mechanization started a new problem in canning crops production, a problem which will progressively affect the contracting of canners' acreage.

Either the farmer must grow canning crops in large enough acreage to justify his owning the specialized pea and corn harvesting equipment, or it must be furnished to him. He will no longer contract for acreage if the mechanical means of harvesting are not available.

There will be many cases where a single grower will contract canning crops each year in sufficient quantities to justify personal ownership. However, the high cost of the specialized harvesting equipment will probably keep most farmers from owning this equipment individually.

The demand for custom work varies by locality at present, and probably will continue to vary in the future. The greater the local mechanization for other crops, the greater is the need for custom work with specialized canning crops equipment. Some canners, because of their location, have been faced with the problem for several years, and have been gradually forced into custom work. This has been particularly true in pea and corn production in the west and midwest where mechanization in other lines has approached 100 percent.

The corn and pea canners' problem has become one of how to most economically and efficiently service his own growers, under his own specific conditions.

There are several ways in which this may be done. I will list and discuss four methods which with variations and combinations to fit local conditions are being used at present.

First, with the canner owning and operating the necessary equipment. Each method has its own inherent advantages and disadvantages. The advantages of the first method may be considered generally as follows:

Point 1. Gives the canner the greatest control of when, where and how the equipment operates.

Every canner knows the advantage of a steady flow of raw material to the plant so this point needs no further discussion.

Point 2. Gives greatest economy to the grower. It is assumed that the canner will operate this equipment without profit as he must compete with the grower harvesting his other crops at cost.

Point 3. The operating personnel should be better trained and therefore should be able to operate the equipment most efficiently.

Point 4. Because the canner should know what equipment would best serve his purpose, the equipment should be better chosen to perform most efficiently.

Point 5. Because his own field staff would completely control the operation, there should be more knowledge of operating requirements.

Point 6. More operating knowledge could lead to improvement of equipment. This method would also have some disadvantages.

1. High capital investment added to capital investments which are already too high.

2. More trained personnel required.

3. More organization and training to be done.

Other Methods

The second method is canner owned but custom operated. This method still requires the capital investment. The only advantage would be in lower personnel requirements but it would probably result in lower efficiency for the canner and higher cost to the grower.

The third method is the equipment owned and operated by a custom operator.

This method would not have the disadvantage of the high capital investment. However, against that advantage must be weighed the disadvantage of:

1. Lowered efficiency to the canner.

2. Greater cost to the growers and this is a very important point. The grower thinks of his return per acre only in terms of his "take home pay." He may work himself, or work some of his own equipment, and not consider it in his cost, but any deduction from his check reduces what he considers as returns; and the higher the deduction the lower that figure gets.

It is essential that the canner approach this new problem with the knowledge that he must make some attempt to overcome it.

Each canner may as well decide now that he must choose one of the

above-mentioned methods or some variation of them.

As long as the crop pays a good return, the harvesting costs will be of less importance to the grower.

As the crop values go down, the harvesting cost will be of greater importance. The canner who goes into the job with new equipment now will have a chance to pick up some of his overhead costs while prices are high and grower does not object so much to high costs.

Each canner must necessarily choose the combination of methods which will best serve his purpose.

Custom operation by a custom operator will be the most costly to the grower, but may serve until crop prices are reduced to the point where a harvesting subsidy from the canner will be necessary in order to hold contracts.

Canner ownership will require an increasing capital investment. Greater efficiency should be obtained with proper management.

IMPORTANCE OF THE FIELD STAFF

By E. W. Montell,
Campbell Soup Co.,
Riverton, N. J.

The quality of the raw product of a food processing establishment can be influenced greatly by a competent field staff. In fact, it is hard to imagine how a successful food processor could manage without one. The staff, by the way, can be one man or a hundred, the principle is the same.

The field staff must be able to carry on the educational activities so necessary for the continued advancement of field practices which, in turn, will result in increased yields of better quality crops. The agricultural information may come from the canner's research staff, the state and national agricultural research organizations, or from practical experience. The main point is that a canner should be able to transmit the latest information to the grower, and the best medium is through a well-trained field representative. Research is ahead at the moment, the knowledge and the know-how is available—the challenge to the field staff is to adopt educational activities which will get the new practices into use the quickest.

The food processor's obligation is to make possible an educational program which will enable his field representative or representatives to become familiar with the latest developments in agricultural research. This can be done by allowing the field representatives sufficient time to visit the research plots at the agricultural college and elsewhere and by allowing them to attend schools at the universities set up for this purpose, by encouraging them to conduct schools among the growers and by conducting demonstrations and experiments on the farms. Most field representatives are willing and able; they need encouragement and aid from management.

There is no better way to foster canner and grower relations than through the field staff, and this can best be done when the fieldman is acquainted with the canner's problems as well as those of the growers, so that he can act as liaison officer presenting the various viewpoints to each. The field representative must be unbiased and impersonal, or else the wrong impression will be created toward one or the other party.

Accurate and reliable information concerning the activities of the growers, the planting of the crops and their development and harvest are duties and obligations of the field staff. Erroneous information has been the cause of many false decisions which have cost the food processors much. A great deal is being done now to study rainfall, accrued thermal units, etc., so that the field staff can be more scientific. Unless they are acquainted with the latest developments along these lines, they cannot be expected to improve their crop estimates.

Who is to do all this field work? What kind of superman does it require? First of all, it takes someone who is interested in agriculture, is loyal, and who has the ability to win friends and influence people. He may have been a truck driver or is a college graduate. Naturally, an agricultural education is helpful, but the man comes first.

Your field representative meets farmers continually and is influenced by their thoughts and desires. He needs counselling. He is the canner's representative, not only in the field, but in his daily life in the community in which he lives.

It is to be expected that processed foods will continue to compete with fresh foods, and they can do so only if the highest quality standards are maintained and the advances in production of canning crops keep pace with other foods. The role of the field staff is on the firing line of each of these endeavors.

TOP PICTURE—The headquarters of the National Canners Association was maintained this year on the Musicians' Balcony in Convention Hall.

BOTTOM PICTURE—In a booth in another part of the Convention Hall the Association displayed models and blueprints of its proposed buildings and ran continuous showings of the N.C.A. film, "Better Labels."

Proceedings of the N. C. A. Technical Sessions at the 42nd Annual Convention

IN this section of the Convention Issue are grouped all of the papers presented at three technical sessions that constituted an important part of the over-all Convention agenda. The first of these was a Conference on Insecticides held under the joint auspices of the Raw Products Bureau and Research Laboratories of the National Canners Association on Monday afternoon, January 17. All the addresses made at this conference are reproduced in this section except that of G. E. Carman, California Agricultural Experiment Station, a copy of which will be made available later. On Tuesday afternoon, January 18 and Wednesday morning, January 19, two Canning Problems Conferences were held under auspices of the N.C.A. Research Laboratories. These covered processing methods, canned foods nutrition, spoilage studies, and plant sanitation and lighting topics. Technical papers reproduced in this section will be available on request.

Conference on Insecticides

Joint Auspices, Raw Products Bureau and Research Laboratories

THE TOXICOLOGY OF THE NEWER AGRICULTURAL CHEMICALS*

By Arnold J. Lehman, M.D., Chief, Division of Pharmacology, Food and Drug Administration

In the development of insecticides the fundamental purpose is to determine the effectiveness of the poison under given conditions and the best method of application. Insect toxicology is usually concerned with the smallest amount of the poison which will kill all individuals. This is in contrast with the broader aspects of the problem which are concerned with the pharmacologic effects of the poison in animals and man and deal with the largest amount which will not produce injury. This latter phase will be discussed here and an attempt will be made to appraise the present status of the newer as well as some of the older agricultural chemicals. A list of the insecticides to be considered follows:

DDT (dichloro-diphenyl-trichlorocthane)
TEP (tetraethylpyrophosphate)
Parathion (0, 0-diethyl 0-nitrophenyl thiophosphate)
HETP (hexaethyltetraphosphate)
Nicotine
Chlorinated Camphene (68% chlorine)
Rotenone
GBH (gamma isomer of benzene hexachloride)
Lethane-384 Special (a mixture of three parts Lethane-60 (beta-thio-cyano-ethyl esters of aliphatic acids with 10-18 carbon atoms) and one part of Lethane-384 (beta-butoxy-beta-thio-cyano-diethyl ether) plus refined paraffin)
Lethane-60 (beta-thio-cyano-ethyl esters of aliphatic acids with 10-18 carbon atoms)
ABH (alpha isomer of benesene hexachloride)
Chlordane (1, 2, 4, 5, 6, 7, 8, 8-octachloro-4, 7-methano-3a, 4, 7, 7a-tetrahydroindan)
Thanite (isobornyl-thiocyano-acetate)
DBH (delta isomer of benzene hexachloride)
Pyrethrins
TDE (dichloro-diphenyl-dichloroethane)
BBH (beta isomer of benzene hexachloride)
Methoxychlor (dimethoxy-diphenyl-trichloroethane)
N-propyl isome (di-n-propyl-6, 7-methylene-dioxy-3-methyl-1, 2, 3, 4-tetrahydro-naphthalene-1, 2-dicarboxylate)
Piperonyl butoxide ((butylcarbityl) (6-propyl piperonyl) (ether))
Heptachlor (1, 2, 4, 5, 6, 7, 8, 8-octachloro-4, 7-methano-3a, 4, 7, 7a-tetrahydroindan dehydrohalogenated)

Acute Toxicity

The insecticides vary widely in their propensity to produce injury following the ingestion of a single dose. In Table 1 the mean lethal dose by oral administration is listed for each insecticide. Comparisons with DDT are listed also. It may be pointed out that the organic phosphate compounds and nicotine are extremely poisonous and rapid in their action. The lethanes and thanite, while not as dangerous poisons as the organic phosphates, have a rapid effect, producing collapse and death within a few minutes. Of the chlorinated hydrocarbon insecticides, chlorinated camphene appears to be the most toxic of the group, followed by the gamma isomer of benzene hexachloride and chlordane. The remaining compounds, including the pyrethrins and the insect activators N-propyl isome and piperonyl butoxide, have such a low order of acute toxicity that the hazards from accidentally ingesting a single dose of these materials appear to be of minor importance. Rotenone poisoning presents a considerable species variation. To our knowledge no human cases of poisoning have been reported and it is probably safe to assume that man is among the less susceptible species to the toxic effects of this insecticide.

Toxicity By Dermal Application

The health hazards connected with the handling of insecticides in manufacturing processes and spraying procedures place considerable importance on the ability of the various insecticides to penetrate the skin. Because of the large number of compounds to be studied, not all phases of this problem have been completed. Table 2 summarizes the results to date. It is worthy of note that all of the compounds are more dangerous to handle when in solution than when in wettable powder or dust form. Parathion and nicotine are the exceptions. Furthermore, repeated exposures increase the hazards to as much as 200 times that of a single exposure. A disturbing feature from the standpoint of skin irritation is that the organic phosphates are only slightly irritating. This means that there is no immediate warning sign of impending danger and could lead to their careless use. The chlorinated

TABLE 1

Comparison of the acute oral toxicities of insecticides with DDT

Insecticide	Mean lethal dose mg./kg.	Ratio
DDT	250	1
TEP	2	125
Parathion	3.5	70
HETP	7	35
Nicotine	10	25
Chlorinated Camphene	60	4
Rotenone	60 (to 3,000)	4
GBH	125	2
Lethane-384 Special	400	5/8
Lethane-60	500	1/2
ABH	500	1/2
Chlordane	500	1/2
Thanite	1,000	1/4
DBH	1,000	1/4
Pyrethrins	1,500	1/6
TDE	2,500	1/10
BBH	>6,000	1/24
Methoxychlor	>6,000	>1/24
N-propyl isome	>10,000	>1/40
Piperonyl butoxide	12,800	1/50

* Reprinted from Bulletin of the Association of Food and Drug Officials. Vol. 10, No. 3, July, 1948.

TABLE 2

Toxicity by dermal application

Insecticide	Skin irritation	Quantities dangerous upon skin application: Single exposure, Dry mg./kg.	Single exposure, Solution mg./kg.	Multiple exposure, Solution mg./kg.	Quantities dangerous to man (est'd): Single exposure grams	Multiple exposure grams/day
DDT	None	None	2,820	150	169	9
TEP	Slight		10	5	0.6	0.3
Parathion	Slight	40	50	5	3	0.3
HETP	Slight			5		0.3
Nicotine	Moderate	60	50	40	3	2.4
Chlorinated camphene	Moderate	4,000	780	40	46	2.4
Rotenone	Mild	None			None	
GBH	Moderate	4,000	50	20	3	1.2
Lethane-384 special	Moderate		500	125	30	7.5
Lethane-60	Moderate		5,000	500	300	30
Chlordane	Moderate		1,880	40	113	2.4
Thanite	Moderate		5,000	1,000	300	60
Pyrethrins	No data					
TDE	Slight		2,820	100	169	6
Methoxychlor	Slight		2,820	600	169	36
N-propyl isome	None		376	160	21.5	9.6
Piperonyl butoxide	None		1,880	200	108	12
Heptachlor	Moderate	2,000	780	20	46	1.2

compounds, although skin irritants in concentrated form, lose this property on dilution and consequently do not give an adequate danger signal of approaching over-exposure. The table gives also the estimated total quantities to which man can be exposed on single application and daily contact before approaching dangerous levels.

Splashings into the eye appear to be a hazard only with respect to the organic phosphates. Experimental evidence shows that a small drop of undiluted TEP spattered into the eye might prove fatal to man.

Chronic Toxicity

One of the most important phases of the investigation for appraising the hazards of insecticides is the long-range effect of ingesting spray residues contaminating fruits and vegetables. A summary of chronic toxicity, much of it preliminary data, is presented in Table 3. DDT is probably the only member of the group listed which has received extensive study. It may be seen from the table that chronic toxicity bears no relation to acute toxicity. The outstanding example of this is the case of the beta isomer of benzene hexachloride. It is not possible to administer a sufficient quantity of this isomer orally as a single dose to kill a rat. However, when fed chronically concentrations as low as 10 parts per million in the diet produced gross evidence of poisoning. Of particular interest also is the response of animals chronically exposed to chlorinated camphene. Rats can ingest a quantity of the compound in the course of 24 hours which, if administered as a single dose, would be fatal. Chlorinated camphene bears a close chemical relationship to camphor and it is known that camphor is readily detoxified in the liver. It is believed that when the chlorinated camphene is ingested in small amounts over an extended period of time, the detoxication keeps pace with the intake thus preventing dangerous concentrations from being reached in the body tissues. Preliminary studies on chlordane indicate that rats cannot tolerate 250 parts per million in their diets for longer than 12 weeks. The analogs of DDT (TDE and methoxychlor) appear to require high levels of feeding before evidence of injury develops.

The chronic effects of some of the newer insecticides have been studied in dogs also (Table 4). It is necessary to employ a different approach when using dogs for chronic experiment and for this reason comparable figures for dogs and rats are not available. In general, it may be stated that dogs are more susceptible to injury from the insecticides than rats.

Pathology

The predominant pathologic lesions produced by the various insecticides are summarized in Table 5. In general, the organic phosphates produce their principal injury in the gastrointestinal tract. Practically all of the chlorinated compounds injure the liver. The lower levels of intake of the various insecticides at which tissue damage may be expected have been established with some assurance in possibly only two instances; namely, DDT and rotenone. Beginning liver damage has been noted in rats when fed at a level of 5 parts per million in the diet of DDT. In the case of rotenone it has been estimated that something like 3.75 parts per million in the diet is capable of producing liver injury in the rat.

General Considerations

It is a fairly safe assumption that chemicals which are toxic to insects are also toxic to man and animals. The great emphasis which has been placed on the specificity of DDT for insects loses its importance when fatal

TABLE 3

Chronic toxicity in rats

Insecticide	Lowest level producing gross effects p.p.m.*	Duration weeks	Remarks
DDT	100	104	
Parathion	25	4	
HETP		12	1000 p.p.m.: no effect
Nicotine	60	43	
Chlorinated camphene	—	8	1200 p.p.m.: no effect
Rotenone	31.2	16	
GBH	400	52	
Lethane-384 special			No data
Lethane-60			No data
ABH	800	43	
Chlordane	250	12	
Thanite			600 mg./kg./day fatal in 4–12 wks
DBH	3,200	52	
Pyrethrins			500 mg./kg./day fatal in 2 wks.
TDE	2,500	104	
BBH	10	36	
Methoxychlor	5,000	16	
N-propyl isome			No data
Piperonyl butoxide			No data

* p.p.m. = parts per million.

TABLE 4

Chronic toxicity in dogs

Insecticide	Dietary levels p.p.m.	Remarks
DDT	2,640	Death in 50 days
Chlorinated Camphene	330	Death in 33 days
Rotenone		2 gm./kg. single doses; survival
GBH	330	Death in 30 weeks
ABH	2,000	Death in 44 days
Chlordane	660	Death in 4 weeks
DBH	3,960	Death in 14 weeks
Pyrethrins	Large amounts	Survival
TDE	1,650	Survival for 19 months
BBH	1,320	Death in 90 days
Methoxychlor	10,000	Survival for 6 months

TABLE 5

Pathology in chronically poisoned animals

Insecticide	Predominant injury
DDT	Liver necrosis and cerebellar degeneration
TEP	Enterocolitis and gall bladder necrosis
Parathion	Enterocolitis and gall bladder necrosis
HETP	Gall bladder necrosis
Nicotine	Inanition
Chlorinated Camphene	Liver necrosis
Rotenone	Liver necrosis
GBH	Kidney and liver necrosis
Lethane-384 special	Generalized organ damage
Lethane-60	No data
ABH	Liver and kidney damage
Chlordane	Liver damage and inanition
Thanite	Liver damage
DBH	None reported
Pyrethrins	None reported
TDE	Adrenal cortex damage
BBH	Liver damage
Methoxychlor	Kidney damage
N-propyl isome	Negative
Piperonyl butoxide	Negative
Heptachlor	Liver damage

doses are compared on a body-weight basis with warm-blooded animals. On this basis the quantities required are practically identical. Furthermore, the least toxic of the insecticides which are listed in this paper may not actually be the safest, since larger quantities of the poison must be used to insure effective insect control.

The fate of the insecticide in the body also has an important bearing on the hazards which exist in the use of these materials. It is known that DDT is stored in body fat at a level 4 to 10 times that of the dietary intake. Gamma isomer of benzene hexachloride storage is about equal to that of the concentration in the diet. A disturbing feature of the distribution of this poison is its appearance in brain tissue. So far as is known, DDT does not possess this tendency. Tissue storage studies with the analogs of DDT show that TDE has a greater tendency to accumulate in the fat than DDT, and methoxychlor probably less so. The fact that DDT is secreted in the milk is already a matter of record. It is suspected that the other chlorinated insecticides behave likewise. This is especially important in cases of infants, where the chief diet is milk. Chemical methods for the isolation of chlorinated camphene or chlordane have not yet reached the stage where it is possible to determine micro quantities and for this reason no distribution studies of these compounds have been made. It is known that parathion has a cumulative action which points toward tissue storage of this insecticide. Translocation of parathion in plants has been proven experimentally, thereby creating a new hazard not enjoyed by any of the other insecticides, with the possible exception of rotenone.

Nothing is known of the dangers incumbent to the use of many of the economic poisons as aerosols. DDT has a factor of safety of several hundredfold under such conditions. The hazards of aerosol formulations of chlordane, chlorinated camphene, gamma isomer of benzene hexachloride and the organic phosphates, to mention a few, can only be surmised. Every precaution should be exercised in their use at this early stage of their development.

Combinations of pyrethrins and rotenone with the two insecticide activators, piperonyl butoxide and N-propyl isome, appear to be the safest for use from all standpoints. However, even here the possible limitations of these combinations await the outcome of the more prolonged laboratory observations, especially lifetime feeding studies of the activators.

For detailed information on the various aspects of the toxicology of the newer agricultural chemicals discussed above, the following references should be consulted:

1. Acute and subacute toxicity of DDT to laboratory animals. Geoffrey Woodard, Arthur A. Nelson and Herbert O. Calvery (Food and Drug Admin.). J. Pharm. & Exper. Therap. *83*, 152-58 (1944).

2. Toxicity of Parathion. E. Conway Hagan and Geoffrey Woodard (Food and Drug Admin.). Fed. Proc., Part I, 224 (1948).

3. Toxicology investigations of compounds proposed for use as insect repellents. John H. Draize et al. (Food and Drug Admin.). J. Pharm. & Exper. Therap.

4. The chronic oral toxicity of DDT. O. Garth Fitzhugh and Arthur A. Nelson (Food and Drug Admin.). J. Pharm. & Exper. Therap. *89*, 18-30 (1947).

5. Tissue distribution of a toxicant following oral ingestion of the gamma isomer of benzene hexachloride. Edwin P. Laug (Food and Drug Admin.). J. Pharm. & Exper. Therap.

6. The pharmacology of DDT. Arnold J. Lehman (Food and Drug Admin.). Advances in Food Research, Vol. 2.

7. Toxicology observations on goats fed large doses of DDT. S. S. Spicer et al. (Public Health Service, Bethesda, Md.). Vet. Med. *42*, 289 (1947).

8. Adrenal cortical atrophy and liver damage produced in dogs by feeding DDD. Arthur A. Nelson and Geoffrey Woodard (Food and Drug Admin.). Fed. Proc., Part I, 277 (1948).

9. Chronic Nicotine Toxicity. R. H. Wilson and F. DeEds (Public Health Service, Bethesda, Md.). J. Ind. Hyg. & Tox. *18*, 553 (1936).

USE AND MISUSE OF DDT, BHC, DDD (DDE), CHLORDAN, TOXAPHENE, METHOXYCHLOR AND PARATHION FOR CANNING CROPS

By Dr. S. A. Rohwer, Bureau of Entomology and Plant Quarantine, USDA

To discuss the use and misuse of insecticidal chemicals is a big order. Even if the discussion is restricted to seven toxic agents as they may be applied to canning crops, the topic is a broad one as there are many things to be considered. None of the insecticidal chemicals listed in the title have been available for testing for more than five years, and one for only two seasons. This reduces what can be said in reference to use. The limited time that the newer insecticidal chemicals have been available for testing precludes cataloging their uses on canning crops into two categories such as use and misuse. It is necessary to consider this topic as containing at least three headings, the third being "don't know."

Even with this additional category, and I propose to use it, it is impossible to make any satisfactory summary. The reasons for this are (1) the many kinds and variety of crops that are canned, (2) the many areas in which they are produced, (3) the numerous number of insects that attack these crops, and (4) last, but by no means least, the many different ways the insecticidal chemicals may be formulated and applied.

In reference to this last point it must not be forgotten that each of the materials listed in the title of this discussion is a chemical which can be used as an insecticide only after it has been mixed with other materials. How it is mixed, with what it is mixed, makes a great deal of difference on how the finished product—the insecticide—behaves and how it can be applied. All the chemicals listed are so toxic to the insects against which they may be effective that only small amounts are required to kill the pest. This means that the finished insecticide contains, by weight and volume, a large proportion of other materials used as carriers, diluents and adjucants. What these various addatives to the toxic chemical may do to the crop, the insect, the machine and the operator is a big problem, and one which has not been explored as it should be. It may even be said we know less about this than we know about the chemicals. The question of formulation is a matter of considerable importance to the grower who uses any of the newer insecticides, including all those listed in the title of this discussion. At present it is not possible to write satisfactory specifications except for a limited number of combinations and it is not possible to say that other combinations cannot be used. My advice to the grower is that he secure his insecticides from concerns that he is satisfied has experience and "know how" in testing and producing finished insecticides.

The use of insecticides on canning crops involves consideration of a goodly number of questions. We need to know the effect of the material on the particular insect that has to be controlled, the effect on the plant, the effect on the natural enemies and the pollenating insects, the effect on the productivity of the soil now and in years to come, the effect on the machine used to apply the material, the effect on the operator, the effect on the quality of the harvested product, and the effect that residues may have on animals—man or beast—that consume the harvested product and the crop residues. As canners and processors of the finished product for market you are concerned with all of these matters as all have some effect on your operations. You are, however, no doubt, more directly concerned with the question of quality of the crops you buy and the residue that may be on them. Entomologists recognize this and appreciate in no small way the influence this particular interest has in guiding the grower in the practices he should use to control pests that attack his crops. In this the canner, food processor and the entomologist have much in common. They all want the grower to produce a high quality crop that is free from insects and from objectionable or harmful residues. They also want the grower to produce this without harm to him-

self, his neighbors or his land. That he should have fair return for his effort is agreed.

With these common interests—if not responsibilities—there are some things we may do individually and collectively to help the grower. A few of the things we should tell him are:

1. Be sure that the insecticide is handled and used safely. Store away from food and wash the container after using.

2. Read, understand, and follow the recommendations made in reference to use. These are based on data, not guess work.

3. Read and follow directions for use. These are carefully prepared for the guidance of the user. They are for his protection. If they are not followed he may easily be the loser and should accept responsibility for his mistakes.

4. Know what insect is to be controlled and use control measures that are recommended for it.

5. Do not over dose. This may result in residues that will make the crop unmarketable.

6. Do not apply the insecticide in a manner or at a time other than that recommended. This is especially important in reference to the newer materials.

It is unfortunate that research has not yet accumulated the data needed to provide a clear understanding on the effect the various new chemicals may have either on the user of insecticides or the consumption of residues that may be on the marketed product. The information now available suggests that all the chemicals listed for discussion are toxic to man and that they should be classed as poisonous, though not all in the same degree. This absence of information on the toxic effect of these chemicals makes it difficult to indicate the uses and misuses. From the standpoint of the presence of residues on or in the product that is to be canned or processed, the only course to follow is say there should be none. For the chemicals that persist or are absorbed their use on canned crops should therefore be restricted more than those which disappear and cause no off flavor. In absence of satisfactory means of removing residues, uses should be confined to applications on those portions of the crop that develop first and not to the part to be processed, to crops where the part to be processed is protected from contamination, or to crops where the part to be processed is in such a stage of growth that any residues do not persist to harvest.

These are criteria that are applied in making suggestions for use. For leafy vegetables and soft fruits they are much the same as those which have long been used in reference to arsenical insecticides. The limitations they impose indicate that several of the older and better known materials, such as rotenone, nicotine, and pyrethrum, should continue to have very important places in the control of insects attacking canning and processing crops.

The persistence of some of the newer insecticidal chemicals, especially DDT, makes it necessary to add another criterion in any appraisal of their use. This is concerned with the residue that may persist on crop remainants that are to be fed to dairy animals and livestock that is being finished for slaughter. It is a well established fact that when residues of the chlorinate hydrocarbon insecticidal chemicals are present on forage consumed by animals, the chemical is accumulated in body tissue, especially fat, and in the fat of milk. There is still much to be learned about the ratio of the residue on the plant tissue to the amount that may be absorbed, how long the chemical may remain in the body tissues, how soon it disappears from the milk when the diet of the animal is changed, how the various chemicals differ in reference to this absorption factor, and the effect consumption of body tissues and milk containing the chemical may have on humans. Until more is known about these various points, it is prudent and advisable to refrain from applying insecticides containing DDT and other chlorinated hydrocarbons to forage or to plants the unmarketed remainants of which are to be fed to dairy animals or to animals being finished for slaughter. Our recommendations included this reservation.

Uses of Various Chemicals On Crops for Canning or Processing

With the wide variety of crops, areas of production, numerous kinds of insects that attack them it is not practical to catalogue all uses on canning crops for the seven chemicals. In a list for this general purpose it would be impractical to include information on the rate and number of applications or the form in which the material may be applied. These matters are of great importance and the user should get full details and follow them carefully. Some of the better established uses are:

Uses of DDT on Crops for Canning or Processing

Apples and pears for the control of codling moth when the skin is removed before the pulp is canned or processed. Tests indicate residues stay with the pomace and the removal of skin is not needed where juice is produced.

Peaches, prunes, plums and cherries for control of oriental fruit moth or other pests when the skin is removed before the pulp is canned or processed.

Grapes for berry moth control where the grapes are used for wines, juice or jelly. Tests indicate that residues are retained by the pomace.

Corn for the control of European corn borer, where fodder is not fed to dairy animals or animals being finished for slaughter.

Peas for the control of pea aphid, where the crop residue is not fed to dairy animals or animals being finished for slaughter.

Tomatoes for control of various caterpillars when skin is removed from fruit before being canned or otherwise processed. For juice it appears unnecessary to remove skins and residues stay with pomace.

Peppers for control of pepper weevil where residues will be removed by washing and wiping.

Beans (string) for control of leafhopper, when applied before the pod begins to form.

Cabbage and related plants, to control various caterpillars when applied before harvested part of plant develops and where crop residue is not fed to dairy animals or animals being finished for slaughter.

To soil for control of wireworms in Western States, where 10 pounds of the technical chemical is thoroughly mixed in the top 6 or more inches of soil.

Uses of TDE on Crops for Canning or Processing

Apples for control of red-banded leafroller where the skin is removed before the pulp is canned or processed. Tests indicate residues remain with the pomace and that juice can be produced without removal of skin.

Tomatoes for control of fruitworm and hornworm when the skin is removed from fruit before being canned or otherwise processed. For juice the skins do not have to be removed as the residue stays with pomace.

Peas for control of pea weevil, where crop residues are not fed to dairy animals or animals being finished for slaughter.

Cabbage and related plants for control of the imported cabbage worm, when applied before harvested part of plant develops, and where crop residue is not fed to dairy animals or animals being finished for slaughter.

Uses of Methoxychlor on Crops for Canning or Processing

Beans (string) for control of Mexican bean beetle and leafhopper when applied before the pod begins to form.

Cabbage and related crops for control of caterpillars when applied before the harvested part of plant develops, and where crop residue is not fed to dairy animals or animals being finished for slaughter.

Peas for the control of pea weevil where crop residue is not fed to dairy animals or animals being finished for slaughter.

Uses of Parathion on Crops for Canning or Processing

Apples for control of mites, wooly aphis, red-banded leafroller or mealy

bug if applied 30 days before harvest and skin is removed before pulp of fruit is canned or processed.

Pears for control of psylla, mites, or mealy bug if applied 30 days before harvest and skin is removed before pulp of fruit is canned or processed.

Tomatoes for control of aphids if applied 30 days before the fruit is picked for canning or processing.

Misuse of Various Chemicals On Crops for Canning or Processing

To catalog misuses of the various chemicals listed on crops for canning or processing is more difficult than to indicate uses. The same factors that make it impractical to catalog uses complicate the question of listing misuses. In addition, the absence of adequate experimentation leaves so much to be desired that it is doubtful whether to catalog an application as a misuse or to place it in the "don't know" category.

It may be stated with assurance, however, that all the chemicals are misused if they are carelessly applied, and not handled with appropriate safeguards. This is true even when the objective is to use them for purposes that are recommended. In general it may be indicated that applications of all the chlorinated hydrocarbon chemicals would be cataloged as misuses if they are made (a) to leafy vegetables after the part of the crop which will be harvested has begun to form, or (b) if it has not been determined that the forage or crop remnants will not be fed to dairy animals or to animals being finished for slaughter.

With present information it is practical, however, to indicate some misuses. Some of these are:

Misuses of DDT on Crops for Canning or Processing

Applications to apples and pears in number or kinds of formulations that leave a residue on the harvested fruit greater than the tentative tolerance of 7 parts per million.

Applications to any crop for the control of mites.

Application to beans for the control of the Mexican bean beetle.

Applications to the foliage of cucurbits and rhubarb to control any kind of insect pest.

Misuses of Benzene Hexachloride on Crops for Canning or Processing

It is well established that the gamma isomer of benzene hexachloride is very toxic to many kinds of insects that attack crops which are canned or processed. It is also well established that insecticides formulated with technical benzene hexachloride, and to a lesser extent with the commercially available chemical which is largely composed of the gamma isomer, may cause off flavor in many crops which are canned or processed. This latter factor is of such significance that for the time being it is believed that the application of benzene hexachloride to any crop to be used for canning or processing should be cataloged as a misuse.

Misuse of Parathion on Crops for Canning or Processing

Available information suggests that the application of insecticides containing parathion to leafy vegetables, such as spinach, turnip greens and perhaps others, or to fruits such as berries, grapes, cherries and apricots, would be so unwise that, for the present at least, it should be classified as a misuse.

"Don't Know" Uses of Various Chemicals On Crops for Canning or Processing

There is no doubt that the foregoing summary of uses and misuses of the various chemicals listed for discussion is unsatisfactory. There are cases where investigators in Federal and State agencies as well as those in industry will disagree. Perhaps most of these disagreements will be the omissions. Some few may think that limitations indicated for use are too restrictive. It is also appreciated that in a few instances the statements go beyond recommendations that have already been issued.

It will be recalled, however, that I used as a premise that there should be no residue of the chemical present in the canned or processed product. Until firm tolerances can be established it is believed this should be the criterion your industry should adopt. It would be unwise to accept tolerances which cannot be established to the satisfaction of your customers. I am not unmindful of your problem of keeping insects and insect fragments out of your products. Nor am I unappreciative of the problem of the grower and the entomologist and their desire to use these new tools which may improve and cheapen the effort and cost of insect control. Nor have I forgotten that you had developed the products and markets for them before these new chemicals became commercially available and that insect control was a part of this development.

With all these thoughts in mind, I have left in the "don't know" category all border-line cases as well as all those which belong there because of little or no experimental evidence. My suggestion to you is that before you secure products for canning or processing which have been treated with chemicals to control insects you satisfy yourselves that they are free from objectionable residues or that you can remove them by approved and available practices. This applies to all insecticidal chemicals, new and old. For the seven chemicals we have been considering inquire closely about all "don't know" uses.

WHAT WE KNOW ABOUT CHEMICAL DETECTION OF INSECTICIDAL RESIDUES OR DEPOSITS

By Dr. H. L. Haller,
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Until about five years ago spray residue determinations concerned themselves chiefly with the inorganic elements lead, arsenic and fluorine. Residues of these elements are still of importance but attention today is focused chiefly on synthetic organic insecticides. The products that have attracted greatest attention may be divided into two broad classes: Chlorinated hydrocarbons and organic phosphorus compounds. Of the chlorinated hydrocarbons, DDT, TDE (DDD), benzene hexachloride, chlordane, chlorinated camphene and methoxychlor have been studied most. All of these products contain a relatively large percentage of chlorine and many of the residue values that have been reported are based on the conversion of the total organically bound chlorine into water-soluble inorganic chlorides with subsequent estimation of the latter by standard methods such as the Volhard method, potentiometric method or amperometric method. Details of these methods may be found in any of the standard textbooks on quantitative chemical analysis and instruments utilizing the principle of the latter two methods are available commercially. The values obtained by the determination of the total organic chlorine are useful because they indicate the magnitude of the residue, the analysis can be made in a relatively short time with standard laboratory equipment, and accurate methods for the determination of small amounts of chlorine are available. The determinations have the disadvantage that they do not identify definitely the organic chlorine insecticide and do not differentiate the insecticide from its degradation products or other organic chlorine compounds that may have been present. Recently it was demonstrated that when DDT, chlordane or chlorinated camphene is fed or applied to cattle such organic chlorine containing residue as may be present in the fatty tissues consists essentially of the unchanged insecticide. These findings were obtained in the following manner.[1] The fat sample

[1] Unpublished studies on DDT by M. S. Schechter, et al., on chlordane and chlorinated camphene by R. H. Carter, et al.

was dissolved in chloroform and extracted with sulfuric acid-sodium sulfate solution. The fat and any other oxygenated products dissolved in the acid mixture and the chlorinated hydrocarbon remained in the chloroform. (For details of separating fat and other oxygenated products from chlorinated hydrocarbons see article by Schechter, et al. Analytical Chemistry 19, 54 (1947)). Application of the Schechter-Haller colorimetric method (Industrial Engin. Chem. Anal. Ed. 17, 704 (1945)) to the residue from the chloroform solution of the DDT experiment demonstrated that the residue was essentially unchanged insecticide. Further proof that the residue was DDT was obtained when it was shown that the toxicity to houseflies (unpublished results Control Investigations Division) of the residue was the same as that obtained with DDT at the same concentration as in the residue. In the case of chlordane and chlorinated camphene the residues remaining after the chloroform had been removed were analyzed for chlorine and the values obtained were calculated as unchanged insecticide. The residues were then tested for toxicity to houseflies (unpublished results this Bureau) in comparison with solutions of each of the known insecticides at the same concentration as the residue. In each case the mortality of flies with the known solution and the solution from the residue were the same.

Detection and Estimates of Residues

These findings, however, do not warrant the assumption that organic chlorine determinations may be used indiscriminately for residue determinations of these insecticides. With benzene hexachloride residues the determination of organic chlorine does not differentiate among the several isomers that may have constituted the original insecticide. Neither has it been demonstrated that there is any relation between organic chlorine values and off-flavor. In fact in most cases where off-flavor was attributed to benzene hexachloride, it has not been possible to detect organically bound chlorine.

All of the chlorinated hydrocarbons yield part of their chlorine on treatment with alkali and methods involving this reaction have been used in spray residue work. (Ind. Eng. Chem., Anal. Ed. 17, 149 (1945).) The procedure has been applied mostly to DDT in which it determines one of the chlorine atoms compared with five by the total chlorine method. It has the advantage that it differentiates DDT from its degradation products.

The detection and estimation of residues by means of reactions based on the development of colors are in general more specific than titration procedures and usually permit the finding of much smaller amounts of a residue. Colorimetric methods for determining residues of DDT (Ind. Eng. Chem. Anal. Ed. 17, 704 (1945)), TDE (same as for DDT; see also J. Assoc. Off. Agr. Chem. 29, 330 (1946)) and methoxychlor (A.I.F.A. News, Dec. 31, 1948) have been developed but none are available for residues of benzene hexachloride, chlordane, or chlorinated camphene.

Quantitative Determinations

A method that is stated to be applicable to residues of benzene hexachloride will be presented by B. Davidow, Food and Drug Administration, at the spring meeting of the Federation of American Societies for Biology to be held in Detroit in April. The method is based on the fact that benzene hexachloride on dehyrohalogenation with alkali yields essentially 1,2,4-trichlorobenzene. This product possesses a characteristic absorption bond in the ultraviolet which permits its quantitative determination.

At the Association of Official Agricultural Chemists meeting held in Washington, D. C., in October 1948 Davidow described a colorimetric method applicable to technical chlordane. When known amounts of this insecticide were added to cabbage, pears, fresh and rancid rat fat recoveries of 74 to 104 per cent of the insecticide were obtained with the method. However, because two crystalline isomers of chlordane isolated from the technical product do not give a colored reaction product with the reagent further investigation of the method is being made.

A color test for chlordane described by Ard (Anal. Chem. 20, 858 (1948)) has been applied only to the technical product or formulations thereof.

Differentiation of Pesticides by Various Standards

Although most of the colorimetric methods are much more specific than the chlorine determinations care must be exercised in their use as analogs and closely related compounds may produce the same or similar colors. For example, DDT and TDE give almost identical colors in the Schechter-Haller colorimetric method. The two products can, however, be differentiated by means of the color test developed by Stiff and Castillo (Science 101, 400 (1945)) as modified by Claborn (J. Off. Agr. Chem. 29, 330 (1946)).

Of the organic phosphorus products highly toxic to insects but also poisonous to man three preparations: Hexaethyl tetraphosphate, tetraethyl pyrophosphate and parathion have received most attention. Of these three products only parathion is likely to involve spray residue problems. Both hexaethyl tetraphosphate and tetraethyl pyrophosphate are very soluble in water and are rapidly destroyed by it to water soluble compounds that are easily removed and thought to be noninjurious. Parathion is only slightly soluble in water and not readily destroyed by it. For its detection and estimation a colorimetric method has been developed and used in spray residue work (Anal. Chem. 20, 753 (1948)). The color that is obtained is identical with that given by diethyl p-nitrophenyl phosphate, the oxygen analog of parathion. This compound is stated to be much more toxic to warm-blooded animals than parathion and it has been suggested that parathion is converted on exposure to the air to the oxygen analog. However, no definite evidence has been adduced that this compound accompanies spray residues of parathion and laboratory experiments have failed to confirm the reaction.

Interpretation of Analytical Value Obtained in Spray Residue Analyses

The interpretation of analytical value obtained in spray residue analyses is of utmost importance. In most cases the insecticide residue is present in relatively small amounts in combination with relatively large amounts of plant or animal materials. In order to determine the residual insecticide it is usually necessary to make a separation of the insecticide to provide for ready handling. In the separation process which is usually made with the aid of organic solvents, small quantities of waxes, plant pigments, coloring matter, etc., are also obtained. These sometimes offer considerable trouble in the subsequent operations. For example, in the total chlorine determination silver nitrate may react with other elements or radicals than chloride ion. In colorimetric procedures by-products and impurities other than the residue may develop colors which give readings on the photometer. It is therefore highly important that an anlysis be made on an untreated sample of the same type of material and a correction applied to the treated sample. The sensitivity of the method employed and the size of the sample are also important factors. By means of colorimetric methods microgram quantities of a residue may be detected whereas titration procedures usually are not that sensitive. It should be remembered also that 0.5 mg. of residue is equivalent to 5 ppm on a 100-gram sample but only 0.5 ppm on a kilogram sample. In cases where the residues are 1 ppm or less it would appear to be desirable to have not less than a one-kilogram sample and results should not be based on a single determination.

SAMPLING TECHNIQUES FOR MAKING RESIDUE ANALYSES

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The deposits of an insecticide will vary greatly on different plants in the same field and particularly on different parts of the same plant. Consequently the reliability and reproducibility of a residue analysis is frequently limited more drastically by the choice of the sample to be analyzed than by the inherent errors of chemical analysis. If the sample is not truly representative of the crop as a whole, an accurate analysis on it will be misleading. Unfortunately, a large proportion of samples are taken without sufficient care or recognization of the principal sources of variation which might be minimized by a suitable sampling technique.

The chief sources of variation in samples might be grouped under two main headings. The first would include the accidental and largely unavoidable variations due to conditions of application, weathering, habit of growth, and other factors not subject to exact control. Normally the sampling process is directed toward averaging the different residues resulting from these variations. However, in certain cases a deliberate bias away from average or random values is introduced in order to show up more clearly some specific correlation. This intentional variation forms the second group.

The intentional bias will be discussed first because of its more specialized nature. A common example is the choice of a sample of fruits, vegetables or other plant parts having the heaviest visible deposit or located in the most exposed position. Such a sample is intended to represent the worst possible lot of produce which an individual consumer might conceivably get from the crop. An analysis on such a sample in the accepted safe range would strongly indicate a safe residue in any part of the crop. A related bias toward maximum values is sometimes introduced by including in the sample plant parts such as stems and outer leaves of certain vegetables which may carry disproportionately high residues but which are customarily removed before processing or consumption. This type of sample gives the maximum safety factor for products processed and packaged in small units where there is little opportunity for a levelling of the residue by blending. On materials processed in large batches this method gives unduly pessimistic values. Some difficulty has been caused in the past where this maximum type of sample was used by regulatory agencies to show an unacceptably high residue on portions of a crop considered safe by the grower on the basis of analysis of an average or random sample. Recognition of the type of sampling technique to be used in such cases might have enabled the grower to predict and correct the difficulty and avoid a heavy loss.

The opposite bias toward low values is often deliberately introduced where insect control is the primary interest. The plant surface having the poorest coverage of insecticide is often the limiting factor in control, and heavy localized deposits may be relatively useless. Thus the taking of discs from the central portions of leaves to avoid the heavier deposits from drops collecting on the edges and the segregation of definite areas of fruit skin to avoid concentrations of residue around the stem or in other depressions may give samples more indicative of insecticidal effectiveness than would a strictly random choice of whole plant parts. Where possible food contamination is in question, however, such data are very misleading if not correctly interpreted.

The most common type of sample and the most generally useful represents a residue as close as possible to the average for the crop, with all bias removed as far as possible. It should most closely approximate the residue to be expected in a large batch of the crop. In a sense, even this method would represent a maximum type of sample for materials intended for processing because the culling, trimming, washing, peeling, blanching, or other operations carried out later would tend toward lowering of the residue remaining in the finished product.

A representative sample might be obtained by taking a sufficiently large number of units completely at random. Such a sample would usually be far too large both for reasonable labor in collecting and for handling in the laboratory. More than a very few pounds in a single sample can seldom be handled adequately in a chemical analysis. The only satisfactory recourse is to evaluate the most important sources of variation and to concentrate the randomization in those directions.

A large proportion of the variations in residue arise from the conditions of application. The quantity and distribution of the deposit will vary with the formulation of the material, the type of equipment used, and the skill of the operator. On large trees the coverage is seldom uniform at different heights and on different sides. On any plants the outer parts tend to shield the inner from good contact with the applied material. Top surfaces tend toward heavier deposits than bottom. Weather conditions such as wind, rain, drying off of dew, etc. during application may give differences of deposit in different parts of the field. Multiple outlets in row crop equipment seldom give even flow, and in addition the active and inert components of dusts are often segregated seriously by the air blast so that the active concentration emerging from the different outlets will vary. Small fruits or vegetables will tend to have heavier residue because they have a greater surface in proportion to their weight.

After application, weathering of the residue will vary with the type of surface and with the location on the plant. Wind and rain may redistribute some of the residue by moving it into natural hollows and depressions in the plant. Uneven growth will change the distribution of the residue and fast growing plants may soon show new growth carrying little or no residue.

These examples do not exhaust the possibilities of significant sources of variation. The relative importance of these sources in any special case can be determined only by a worker familiar with the crop and the conditions of the treatment. A factor significant in one case may cause little or no variation in another. However for most crops attention should be paid to choosing random or average sizes, positions on the plants, and plants in different positions relative to the application equipment.

The taking of duplicate samples is one of the best methods for checking the effectiveness of the method of sampling. Much more confidence can be placed in analytical results which agree for two samples taken in the same way than a single result on one sample twice as large.

The importance of good check or untreated samples is often overlooked. Untreated samples when carried through an analysis almost invariably indicate a small apparent quantity of the residue being sought. This does not indicate the presence of the actual material, but usually of other naturally occurring materials giving somewhat similar reactions or colors. These false values must be deducted from the results on the treated samples to give the true values of the residue. These samples should be taken with the same care as the treated samples.

Another point often overlooked is the necessity for care in handling the samples. Many residues may easily be brushed or jarred loose on handling or shipping. The container should be of such a nature that any loosened material will be retained and can be recovered quantitatively for purposes of analysis.

In summary, the important factors in choosing samples for residue analysis are (1) the avoidance of purposeful choice of bias, (2) recognition of the greatest sources of variation for the crop in question, (3) taking average lots to cover these variations, (4) including adequate check samples, and (5) handling the samples with the proper care.

AVOIDING HARMFUL RESIDUES IN VEGETABLE CROPS

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In this discussion it is not expected that there will be found a final solution to the insecticide residue problem on vegetables. It is the intention to present such information as may be of benefit in planning and directing the control of insects affecting vegetable crops. Unfortunately, vegetable growers cannot expect a good yield and good quality of product unless some steps are taken to protect the crop from insect damage. Of the many kinds of devices and methods of insect control that have been tried, insecticides have proved to be the most practical. Many insecticides are as lethal to man as to the insects. The difference is that a smaller dose of the poison is required to kill the insect than to harm man.

Insecticide residues on vegetables first became a problem in this country 75 years ago. About that time a green caterpillar imported from Europe became a pest of cabbage, and Paris green was used for its control. This caterpillar, now known as the imported cabbageworm, and also several other native and imported larvae, have been associated with residues ever since. To control the pests lead arsenate, calcium arsenate, magnesium arsenate, and the fluosilicates were developed as insecticides. They were recommended to the growers and used by them in their efforts to control an increasing number of insect pests. Although these materials afforded effective control of many common pests, their widespread use intensified the problem of insecticide residues.

In the early '30's there was a general indiscriminate use of arsenicals in certain parts of the country on such crops as cabbage and celery. Health officials were compelled, because of excessive residues found on these marketed crops, to halt and condemn interstate shipments of carload lots of these vegetables. The seriousness of the situation was recognized by the entomologists, but they also recognized that there was little to offer the growers as substitutes for the arsenicals. Therefore, intensive investigations were undertaken on the insects affecting the cabbage and celery crops of the South, the objective being to develop, if possible, some form of relief for the growers. One of the first steps in this relief program was to recommend against the use of arsenate of lead, because of the lead factor. The other steps in the program were: washing the harvested produce, studies of plant growth in relation to the application of arsenicals and maturity of the crop, the development of other insecticides to substitute for the arsenicals. The goal sought was an insecticide that would reduce or eliminate the residue hazard.

In the early work it was soon learned that washing harvested produce with water was of no value in removing residues from leafy vegetables. Careful washing of snap beans, peppers, and tomatoes was, in general, satisfactory.

Growth Studies: Detailed growth studies were conducted on celery, cabbage, cauliflower, and lettuce. On celery grown in Florida it was shown that no residues resulted from arsenical sprays or dusts applied before the last six weeks of growth. The foliage which had developed by that time and which bore the residue, had either died and dropped from the plant or was stripped from the plant at harvest time.

The work with cabbage showed that residues could be avoided if no application of arsenicals was made after the heads began to form. Cabbage treated after this time showed excessive residues not only on the four outside loose leaves but on the more compact inner leaves. In other words, the studies showed that it was unsafe to apply an arsenical to the cabbage at a time when any leaf of the plant that would be marketed or eaten was exposed.

The growth and residue studies on cauliflower showed that it was dangerous to use arsenicals after the curd had begun to form. This was the only way to avoid residues on the marketed head of cauliflower, which included the protecting outside leaves. While no growth studies were made on broccoli, this crop can be placed in the same category as cauliflower; that is, no arsenical application should be made after the buds show.

On lettuce, it was found unsafe to use arsenicals beyond the seedling stage. On the crop as it is grown in Arizona, they should not be applied after the thinning.

The information on growth studies of spinach is not extensive, but the application of an arsenical to the crop after it has passed the seedling stage is not recommended.

Kale, collards, and turnip greens are likely to bear undesirable residues if treatment with an arsenical has been made after the crop has reached a stage of development where it is bearing the foliage that will be used for food. Washing or weathering cannot be depended upon to cleanse these crops of insecticide residues. Rainfall removes some but not enough of the insecticide. Residue studies following the control of the Mexican bean beetle with calcium and magnesium arsenate showed that residues may be expected on the green beans if the crop is treated after the blossoms drop and the young beans begin to form.

Experiments on the control of a fruitworm on residues revealed that an arsenical cannot be used on the bearing canes after blossom drop without measurable quantities of arsenic being found on the harvested product.

Development of insecticides.—These plant growth studies and analysis of arsenical residue studies showed when it is safe or unsafe to use an arsenical or other similar material on some crops, and served as a basis for the timing of arsenical applications to avoid a residue hazard. However, they also brought out clearly the need of an insecticide that could be used on the crop after it is no longer safe to apply an arsenical. The insecticide investigations carried on for this purpose along with the plant growth and residue studies were very productive. It was determined that the use of rotenone and pyrethrum powders would aid in pest control and eliminate the serious residue problem. The chief assets of these two materials are their effectiveness against certain insects in dilutions not harmful to man and the fact that their toxic constituents dissipate within a few days after application to the plant. Unfortunately, these materials are selective in their action against insects, being effective agaist some and totally ineffective against others. For example, rotenone is very effective against the Mexican bean beetle, the asparagus beetle, the Colorado potato beetle, and the pea weevil. It is effective and can be used successfully in the control of the green caterpillars which affect cabbage and other cole crops, as well as against loopers on lettuce, several kinds of flea beetles, certain aphids, and the striped cucumber beetle. However, the rotenone-containing insecticides are of little or no value against the tomato fruitworm, the cutworms, the pepper weevil, the celery leaf tier, the spotted cucumber beetle, leafhoppers, the tomato hornworms, plant bugs, and several kinds of aphids.

Insecticides containing pyrethrum, however, have been used successfully against certain pests where rotenone is not effective, particularly the celery leaf tier, leafhoppers, webworms, and some of the larger species of plant bugs, such as the tarnished plant bug. Like rotenone, pyrethrum is not effective against the tomato fruitworm, the southern tropical armyworm, the tomato hornworm, the cutworms, and some species of aphids. To control most of these insects it is necessary to use an arsenical, a fluorine compound, DDT, or some other material that carries with its use the hazardous residue problem.

Conclusion: The investigations on washing produce and on crop growth in relation to timing of arsenical applications to avoid residues, and the development of rotenone and pyrethrum as agricultural insecticides have not, as realized, completely solved the problem of "How to avoid residues

on vegetable crops," and at the same time obtain maximum crop protection from all common insect pests. However, they have brought to light the limitations on the use of arsenicals and the restrictions that must follow the use of any insecticide the residue of which is considered hazardous to the health of man. For example, if residues from the use of DDT, benzene hexachloride, TDE, chlordane, toxaphene, and others are as much of a menace to the health of man as the arsenicals, their use for the control of insects affecting vegetables must be subject to the same restricted use. That is, these insecticides should not be used on the crop when it is bearing the edible foliage or fruit unless it is known that the residue can be removed by washing or stripping. Naturally, the primary interest of an entomologist is the development of effective insecticides, but equally important to this interest is the control of insects by means which will not constitute a hazard to the health of man and the loss of crop to the grower or pack to the canner because of insecticide residues.

Canning Problems Conferences

THE PRACTICAL VALUE OF CAREFUL RETORT OPERATION

By D. V. Alstrand and R. Royce, American Can Co., Maywood, Ill.

Retorting is one of the fundamental operations in the present day conventional canning of low-acid foods. Proper retorting of the carefully prepared food, which previously has been sealed hermetically into containers, renders it free of microbial life capable of spoiling the food under ordinary storage conditions and, therefore, is an obvious requisite for successful canning. In spite of the great importance of the heat processing of canned foods, there often is laxity in carrying out this critical step.

It is generally conceded that until comparatively recently the subject of proper retort installation and operation had not been thoroughly investigated, reported and discussed, and that the existence of improperly equipped and mishandled retorts in the canning industry was a result of the lack of available authoritative information rather than the lack of application of established knowledge. During the past few years, however, extensive thought and work have been expended in developing the fundamental principles, and detailed discussions available in the literature have covered all phases of retorting. Instructions in retort installation and operation also have been prepared and made available by various organizations connected with the canning industry. It still is true, however, that in many canneries one or more of the proved retorting requirements are not being observed and such malpractices can and do lead to costly spoilage and unmerchantable goods. Such loss of merchantable containers not only is an unnecessary economic waste in itself but often involves damage to adjacent stocks, loss of good will of the distributor and, in some instances, even may present a hazard to the health of the consumer.

The providing of adequate and proper retort equipment and the general observance of correct retorting principles are the responsibilities of the cannery management but the actual application of proper retorting practices is the responsibility of the retort operator. In order to bring the attention of both the management and the operator to the points which experience has shown are most often neglected in retort installation and operation, a series of brief questions has been directed to each. These questions are enumerated in the accompanying panels. *(See below).*

It would be well for the operator to have his set of questions posted at his record table or near the retorts where it will serve at all times as a reminder to check the factors listed. The management might profitably keep a set of both questions at hand to call to attention from time to time the need for proper equipment and for observing correct procedures in the retort room.

Having listed questions designed to raise the curiosity of both the management and the operator regarding existing equipment and retorting practices in the plant, discussion of each question in each of the two panels will follow. It is hoped in this manner to emphasize the danger arising from failure to observe established principles, to give a few examples of the consequences of such failures, and to present brief discussions of the proper corrective measures. It is realized that there is some overlapping of the questions directed to the management with those directed to the operator but since the basic interests of each are related it is felt that the discussion of each set may not be unduly repetitious.

The questions compiled for the management will be taken up first as follows:

To the Management:

1. Are your retorts properly designed, equipped and installed?

Correctly designed, adequately equipped and properly installed retorts are prerequisites for satisfactory retorting. Only inferior performance can be expected from inferior construction and installation. Instances illustrating this point frequently are encountered. Many canners who, for one reason or another, have not obtained first class retorts and equipment and have not followed recognized installation plans ultimately have found that they were practicing false economy. Properly designed and constructed retorts and auxiliary equipment such as thermometers, pressure gauges, controllers, etc., are available from many reliable manufacturers.

Although many systems of retort piping are possible, each hook-up can be made correctly or incorrectly. It is not the purpose of this paper to discuss in detail various methods of retort piping, but some of the points which should be checked by management are:

a. Are the steam, water, air and vent pipes of a satisfactory size?

b. Are the steam spreader pipes installed correctly?

c. Are bleed petcocks located on the thermometer pocket and on the top (or bottom) of the retort?

d. Are the retorts equipped with safety valves of sufficient size and with accurate thermometers and pressure gauges?

It is suggested that for answers to the above questions reference be made to the literature or to a laboratory connected with the industry.

2. Are your products processed without delay after closing?

In the processing of many products, the initial temperature within the can is extremely important. Some packers have based their processes on the closing temperature of the cans even though considerable delay is encountered in the period between sealing and processing. The initial temperature in cans which have been held will be lower than the closing temperature and may affect the sterilizing value of the process, especially for viscous products which heat by conduction only. Thus, it is advised that the process be based on the average temperature of the can contents of the coldest cans at the time the process is started.

Delay in processing cans following closure also can result in other difficulties. In one instance off-flavor and detinning in spinach was attributed to holding the cans for as long as 2½ hours between closing and processing. In the packing of vacuum pack whole kernel corn, the vacuum in the can at the time the cook is started is very important. Unprocessed corn gives off gases which, if the cans are held too long, lower the vacuum to such an extent that heat penetration will be retarded and understerilization may result. Loss of vacuum in vacuum-packed whole ker-

nel corn cans resulting from excessive holding of closed cans prior to processing also may cause buckles due to excessive pressure in the containers during processing.

Adequate retort capacity should be provided so that the production of the canning room can be handled without delay. If for any reason production in the canning department is held up, partial retort loads should be processed rather than wait until a full load is available.

3. Are your retorts vented and bled properly?

Since it has been found that air trapped among cans in a retort during the process may be responsible for underprocessing of the cans in that area, the attainment of uniform temperature distribution throughout the retort from the beginning to the end of the cook is a "must." Inadequate elimination of air also may be the direct cause of such difficulties as paneled cans, rusted cans and non-uniformity of cook between different cans in the retort.

To attain this uniform heat distribution, the retorts must be vented thoroughly during the come-up period and bled adequately during the entire cook. This subject has been studied extensively by means of heat distribution tests in retorts fitted with a series of thermocouples and has been covered in detail in the literature. It is well that management determine the correct venting schedule for the particular retort lay-out concerned.

4. Are you sure the retort thermometers and gauges are accurate?

It is a tragic fact that in a relatively large number of canning plants the thermometers and gauges are sadly neglected.

Even though temperature-pressure agreement cannot be relied upon to assure satisfactory venting operations, such agreement should always be attained. When the gauges and the thermometers are not accurate, confusion follows as to which is correct. Non-uniformity of heat distribution and serious errors in actual processing temperature may result. In one instance, where proper checking had not been done, it was found necessary to reprocess several thousand cases of peas because the thermometers were in error by as much as 10 degrees.

As a general rule, a yearly check for accuracy should be made of all gauges and thermometers. Due to more involved mechanism the dial type thermometers require checking more often than other types.

5. Are you using recommended process times and temperatures for your products?

Over a period of several years, considerable data have been accumulated regarding the rate of heat penetration and the heat resistance of spoilage bacteria in canned foods. On the basis of these data the National Canners Association Research Laboratory has periodically published recommended processes for a large number of low-acid foods in N.C.A. Bulletin 26-L. These recommended processes should be followed religiously and should any other conditions be desired, advice from a laboratory connected with the canning industry should be obtained.

It is essential that canned foods be processed for the recommended times at definitely controlled, specified temperatures. An automatic controller to maintain accurately the temperature at the specified point is recommended. Hand controlling of retorts is not desirable since, when using this method, variations of several degrees from the processing temperature are usually encountered.

Reliance should not be placed on memory as to the correct processing times and temperatures. Memory often is deceitful and poor memory may be serious and costly. For instance, at the start of a recent canning season, one operator was processing whole grain brine packed corn 10 degrees below the recommended retort temperature. After this error was discovered, it was necessary to recall several thousand cases from all parts of the country and reprocess the cans.

Reference should be made to the processing bulletin or record of recommendations at the start of the season. Likewise, a check should be made to be sure that the retort operator knows exactly the times and temperatures required for each product and each container size. This information should be supplied to the operator in the form of a written list.

6. Is your retort operator capable and trustworthy?

In view of the importance of heat processing of canned foods, incorrect operation of the retorts obviously can mean partial or entire failure of the pack. The labor situation the past few years has been rather difficult but the cannery manager should do his utmost to select a man who can be trained so that he understands his duties and who is impressed with the importance of the retorting operation. Indifference in maintaining the accuracy of process temperatures and times, especially cutting cooks at the end of the day's run, is a factor sometimes involved in spoilage incidents.

Having covered the questions directed to management, attention now is given to those which should be uppermost in the minds of the retort operator.

To the Retort Operator:

The following questions should be submitted to the retort operator:

1. Are all cans processed without delay after closing?

This question was discussed in the previous section but the retort operator should understand that it is important that all cans be processed without delay in order to avoid the possibility of spoilage, off-flavors or the other difficulties described.

Should delays be encountered due to insufficient retort capacity there is little the operator can do except to advise his superior each time such situations arise. The processing of partial retort loads when canning department production is halted should, if possible, be practiced.

2. Are the retorts vented properly during the come-up?

Many retort operators confuse venting and bleeding. Vents are *large* valve-controlled openings in retorts used for elimination of air during the coming-up period. Bleeds are ⅛-inch petcocks located on the thermometer pocket and on the retort at the opposite end from which the steam is admitted. Each retort operator should understand the purpose of venting and should know the recommended venting schedule. It is true that allowing considerable amounts of steam to escape into the cook room can result in unpleasant working conditions. Should such conditions prevail, the venting schedules should not be reduced, but rather attempts should be made to have suitable ventilation provided or consideration be given to redesign of the retort room to avoid such conditions.

The timing of the process should not be started until all points in the retort are at the processing temperature and the thermometer and pressure gauge are in agreement.

3. Are all bleed petcocks left full-open during the entire process?

The ¼-inch bleed petcocks should be full-open during the entire process to provide circulation through the thermometer pocket and also to prevent accumulation of non-condensible

To the Management

The Process Is Critical

Can you answer *yes* to each of the following questions?

1. Are your retorts properly designed, equipped and installed?
2. Are your products processed without delay after closing?
3. Are your retorts vented and bled properly?
4. Are you sure the retort thermometers and gauges are accurate?
5. Are you using recommended process times and temperatures for your products?
6. Is your retort operator capable and trustworthy?

To the Retort Operator

Processing Is Important

1. Are all cans processed without delay after closing?
2. Are the retorts vented properly during the come-up?
3. Are all bleed petcocks left full-open during the entire process?
4. Have the thermometers and gauges been checked recently?
5. Are the processes accurately timed?
6. Is the correct process being used?
7. Are the processed cans promptly and thoroughly cooled before storage?

If in doubt ask your foreman or plant manager.

gases that may enter the retort with the steam.

4. Have the thermometers and gauges been checked recently?

Such a question will serve as a check on the management in maintaining these important instruments in good condition. All thermometers and gauges should be checked at least once each year.

5. Are the processes accurately timed?

The time at which the process is started and the time at which cooling should be started should be written down on suitable forms and carefully checked to determine whether they are correct. An accurate and easily read clock or automatic timer should be used. Process time should not be started until the temperature is actually at the processing level.

6. Is the correct process being used?

It is the responsibility of the management to supply the retort operator with the correct process time and temperature for each product and can size which should be in the form of a written list so that the operator will not be required to rely upon his memory. The process chart should be followed rigidly.

7. Are the processed cans promptly and thoroughly cooled before storage?

Storage of cans whose average temperatures are substantially above 100° F. may cause spoilage due to the growth of thermophilic bacteria or may cause loss in quality due to stack burn. Unless means are provided to dry the cans completely, cooling to average can temperatures much below 100° F. may cause rusting since insufficient heat remains in the cans to evaporate adhering water. Cans larger than the No. 2½ size which are processed at 240° F. or above must be cooled under pressure during the first stages of the cool in order to avoid buckles and possible spoilage as a result of disturbed seams. Retorts must be piped properly for pressure cooling and the cooling procedure carefully followed.

Due to its limited scope, this presentation could not cover all angles of retorting but possibly the brief comments following the series of questions directed to the management and to the retort operator will cause reflection upon existing retorting methods used for low-acid foods and possibly lead to correction of some of the deviations from recommended practices observed in recent years. Details not provided by this presentation can be obtained from published material or by consultation with laboratories connected with the canning industry.

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COMPARISON OF EXISTING METHODS OF PRODUCING VACUUMS IN CANS

By G. T. Peterson,
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Continental Can Co.

The necessity of properly exhausting air from the contents of cans has long been recognized in the packaging of most food products. Originally, it was believed that the elimination of air and the production of good vacuums were largely responsible for the preservation of canned foods. Later, when better understanding of the bacteriological aspects of food preservation developed, this idea was abandoned. It was discovered that while certain aerobic types of bacteria require oxygen for growth, there are many anaerobic types that grow in the absence of oxygen. Most of the spoilage organisms in canned foods are of the latter type. Consequently, exhausting the can of its air content affords no protection against bacterial spoilage.

Bitting[1] in 1916 and Magoon and Culpepper[2] in 1922 listed some of the reasons for exhausting canned foods as follows:

1. To draw in the ends of the cans, thus giving an index to the condition of the contents.

2. To minimize the action of the contents on the container. (corrosion).

3. To prevent unnecessary strains on the cans during processing. (buckling).

4. To produce a desirable effect on the product itself.

The term "vacuum" in canned foods is used to describe the pressure inside of the can as compared to atmospheric pressure and is usually designated in terms of inches of mercury.

When air is exhausted from a container the pressure inside becomes less than that on the outside. It is this difference in pressure that is measured by a "vacuum gauge." When no pressure differential exists between the outside and the inside of the can, the vacuum reading is zero. When complete air removal has been accomplished the vacuum reading registers the barometric pressure which in turn is dependent on local weather conditions and altitude.

Air is present in most canned foods at the time of closure, in voids in the product, as occluded and dissolved gases in the product, and in the headspace above the product.

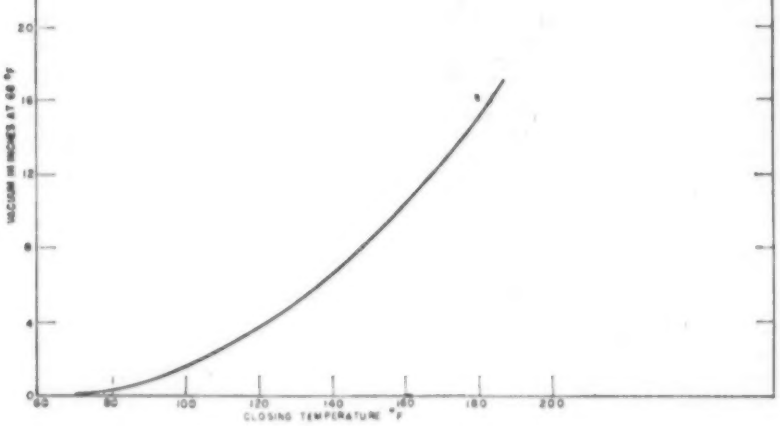
The earliest method of removing air from canned foods was by heating before closure. Later mechanical vacuum means were developed, and more recently, injection of steam directly into the headspace (later referred to as "Steam Vac") has been employed for accomplishing similar results. Each method has found wide usage, depending somewhat upon the type of product, conditions of operation, and the desired degree of vacuum. It was thought that a discussion of each method, comparing the various advantages and disadvantages might contribute to previous information, and would assist the canner in the selection of the proper equipment for his particular products.

A discussion of various methods of producing vacuums in cans follows:

A. Preheating before closure

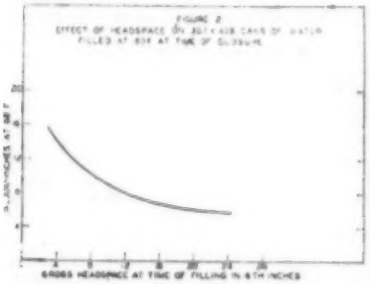
Most of you are well acquainted with the various methods of preheating foods prior to closure for obtaining vacuums in cans. In producing vacuum by this means, the product may be heated prior to filling, or after filling, or it may be heated both before and after filling. Heat in this case is employed to expand the product, to expand and drive out the occluded and dissolved gases in the product and to rarify the air in the headspace before closure. The length of heating and the final temperature attained before closure have a very important relationship to the ultimate vacuum in the can.

FIGURE I
RELATION OF TEMPERATURE TO VACUUM IN 307 X 409 CANS OF WATER-3/16 INCH GROSS HEADSPACE



In consideration of the above, Figure I shows the relationship between the closing temperature of the can contents and the resultant vacuum produced in the can. In collecting these data, 307 x 409 size cans were filled with air-saturated water at various temperatures and 3/16-inch gross headspace. The vacuum readings were taken after the sealed cans had been cooled to 68°F. As would be expected, the higher the sealing temperatures, the greater are the final vacuums in the cans.

At any given temperature, variations in the headspace also will affect the final vacuum in the can. This is illustrated in Figure II, which shows the relation of vacuum to various amounts of headspace in 307 x 409 size cans of water closed at 180°F. and cooled to 68°F. It is apparent from this curve that as the headspace de-



creases the vacuum increases quite rapidly, particularly below 6/16-inch gross headspace.

The above relationships shown in Figures I and II apply principally to liquid products which normally contain much less entrapped air than brine, and to syrup-packed fruits and vegetables and the like. Generally, most brine- and syrup-packed fruits and vegetables and some fish and meat products receive the bulk of their heat treatment after being filled into cans. In these instances, heating is accomplished by passing the filled can through a steam or hot water exhaust box. It is common to refer to exhaust box treatment as "thermal exhaust" and to preheating before filling as "hot fill."

The amount of air in the void spaces and that occluded or dissolved in the product is variable, depending upon the particular product and the method used in filling. Therefore, the necessary amount of thermal exhaust can only be determined by actual test as the final temperature reached at the end of the heat treatment is only one factor in the amount of vacuum present after closure and cooling. Since some products contain much more occluded air than others, they may require a longer exhaust at a given temperature. It has often been found that a short high temperature thermal exhaust will result in a lower vacuum than if a longer time at a more moderate temperature had been used, even with equivalent final closing temperatures. Whole kernel corn in brine and RSP cherries are examples where long thermal exhausts are important in the production of good final vacuums. It may be added that with products containing large amounts of entrapped air, mechanical agitation or vibration of the can and its contents is often helpful in assisting thermal exhaust in removing this air.

In discussing vacuums formed by thermal means, it is convenient to speak of (a) vacuum resulting from the rarification of headspace gases during heating and (b) vacuum resulting from the contraction of the contents during cooling. There has been a belief that the greater portion of the vacuum is due to the expulsion of headspace air which is not usually true when cans are closed commercially. Clark, Clough, and Shostrom [1] in 1923 under more or less theoretical conditions, determined the effect of the contraction of water, the effect of vapor in the headspace and the effect of the expansion of the headspace air in an experimental rigid container. They indicated, assuming a rigid can closed under the conditions of the test at 132°F., that the resulting vacuum at 72°F. would be aproximately one-third due to contraction of the liquid and two-thirds due to the exhausting of the headspace air.

In regular cannery practice these theoretical conditions seldom are attained due to the rapid movement of the can which prevents the setting up of equilibrium conditions of water vapor and air temperature in the headspace.

In our laboratory, data have been collected to show the specific relation of occluded gases in the product, the effect of the expansion and contraction of the product, and the degree of air exhaustion of the headspace volume on the final vacuum in a can closed under actual operating conditions. These data, shown in Figure III, were collected using 307 x 409 size cans of water heated to various temperatures and filled to 5/16-inch gross headspace.

Corrections were made for the inward distortion of the ends under varying amounts of vacuum and also the error produced by the air in the Bourdon type vacuum gauge.

In the above data, Curve 1 shows the measured vacuums obtained for air-saturated water. Curve 2 illustrates the vacuums obtained with deaerated water measured as in Curve 1. Curve 3 illustrates the theoretical vacuums that would result from the contraction of water alone in a rigid container, assuming no exhausting of headspace air. Curve 4 illustrates the measured vacuums obtained in Curve 2 but corrected for the inward distortion of the ends and the error in the vacuum gauge readings (rigid can).

It may be observed from Curves 3 and 4 that no significant amount of exhausting of the headspace air occurred under the above conditions of fill and closure, until relatively high closing temperatures were reached. Under practical closing machine conditions, it appears that the vapor pressure relationship for displacement of air in the headspace does not play a significant role until temperatures of almost boiling are reached, due mainly to disturbing currents of air around

the closing machine. Consequently, until closing temperatures almost reach the boiling point, the major factor in producing vacuums in cans of air-free water is from thermal contraction. The above facts are further borne out by conclusions made by Clark, Clough, and Shostrom* that clinching the covers to cans before passing them through an exhaust box results in higher vacuums than by passing open cans through the same exhaust box.

Exhaust boxes are generally best adapted for canned foods that can readily be heated, such as brine- and syrup-packed fruits and vegetables. Since they provide a very practical means of removing dissolved and occluded air from within the product, they are extensively used for corrosive fruits such as red pitted cherries, cultivated blueberries, and strawberries. Other products which have been successfully exhausted in steam or hot water baths are tomatoes, whole kernel corn in brine, beets, carrots, pimientos, most fruits, olives, fish and other marine products, and some meat products.

The major disadvantages of exhaust boxes are in their bulkiness and their large steam requirements. They are somewhat less sanitary than other vacuum-producing means and require some overhauling from season to season in order to operate satisfactorily. However, they are very widely used for a great variety of products and do an excellent job in producing acceptable vacuums in cans.

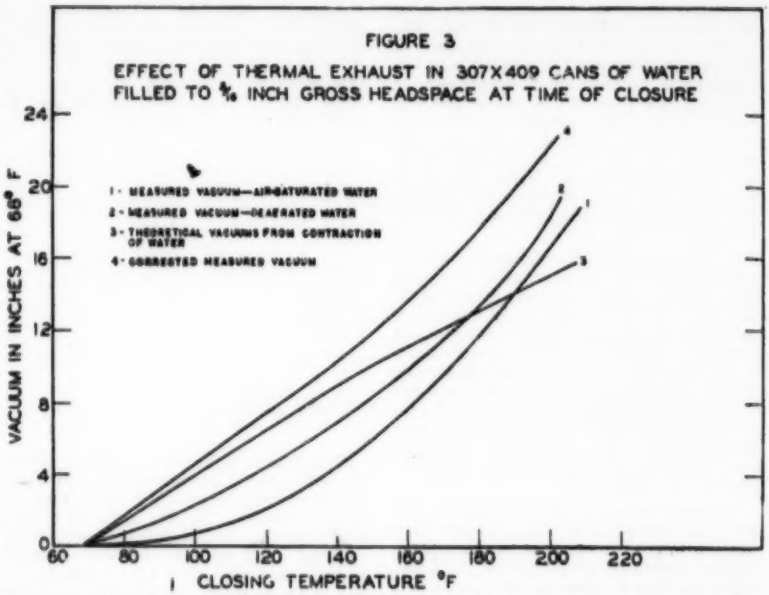
B. Mechanical Vacuum Closures

It is intended to limit the discussion of mechanical vacuum closures to that afforded by ordinary high speed vacuum closing machines. In this case the filled cans while cold or at a rather low temperature are passed into a clincher which loosely clinches the covers without forming an air-tight seal. The cans are then transferred through a suitable valve into a vacuum chamber, subjected to vacuum for an instant while in the vacuum chamber, sealed, and then ejected through another valve. Vacuums drawn on the machine while the cans are in the vacuum chamber may be varied over a wide range, depending mainly on the desired final vacuum in the can and also on the temperature of the liquid contents.

As may be understood from the above brief description of high speed vacuum-closing machines, this method of exhausting air from canned foods subjects the contents to a vacuum for a rather short interval of time before closure. Therefore, the air is withdrawn mainly from the headspace, and only partially from the product itself. This type of closure is particularly well adapted for exhausting air from solid products such as meats and fish. These products are usually less adapted to thermal exhaust treatments, as they heat slowly, and in any case the resulting vacuums would not be as high as those obtained by mechanical vacuum closure.

FIGURE 3

EFFECT OF THERMAL EXHAUST IN 307X409 CANS OF WATER FILLED TO 1/16 INCH GROSS HEADSPACE AT TIME OF CLOSURE



One group of products particularly well adapted to mechanical vacuum closures are the vacuum-packed vegetables which contain only a small amount of brine (½ oz. per 12 oz. can) and a relatively large amount of air. In this case thermal exhaust is not well suited since the product is analogous to one with only a small amount of liquid to expand during heating and having an extremely large headspace. Therefore, unless very high temperatures were reached during thermal exhaust, you would not expect to produce much vacuum using thermal means alone. However, with mechanical vacuum closures it is not difficult to draw vacuums in the machine in the range of 25-27 inches with a resultant final vacuum in the can of 23 inches.

There is one difficulty with high speed vacuum closures in connection with some brine- and syrup-packed foods that should be mentioned. Since the vacuum is applied over a very short interval of time, "flashing" of the liquid contents from the can will occur when there is an appreciable amount of dissolved or occluded air in the product and in the void spaces in the product. This happens because air escaping rapidly from the contents of the can will often carry liquid with it at the same time. This is especially true with syrup-packed fruits such as peach and pear halves, sliced and diced fruits, and pitted cherries, and it results in some syrup loss. This difficulty has been overcome by employing a prevacuumizing step prior to vacuum closure. For canned fruits, particularly, prevacuumizing syrupers have been developed which operate as follows: Freshly prepared fruit is filled into cans and passed into a vacuum chamber which draws a vacuum in the range of 20-27 inches on the filled can, exhausting most of the air surrounding the product and some from within the product itself. While still under vacuum, syrup is added to the can to a predetermined height and the filled can is then transferred to the open atmosphere. With this preliminary air exhausting step, the filled cans can be sealed in a vacuum closing machine with little variation in the final vacuum from can to can and with little or no loss of liquid content.

Proper adjustment of the headspace is important to the proper performance of a vaccum-closing machine. When no headspace is provided for, as could be the case with some solid meat products, it is not possible to produce a vacuum in the can. In the case of liquid-packed foods, when no headspace is provided, part of the liquid will be withdrawn by the machine before a vacuum in the sealed container is achieved. However, in this case, besides the undesirability of withdrawing liquid from the can and into the closing machine itself, the final vacuums and headspaces are apt to be very uneven.

The principal advantages of mechanical vacuum closure over thermal exhaust may be briefly summarized as follows: It is more adaptable for producing vacuums in products difficult to heat; the floor space requirements are not as large; there is less spillage of the contents of the can during handling; and the cans can be handled in a more sanitary manner.

C. "Steam Vac" Closure

As previously mentioned, one of the latest developments in producing

vacuums in processed foods has been the injection of live steam into the headspace at the time of closure. If live steam is properly injected into the headspace volume of a container, it will replace essentially all of the air with steam. Then, providing the cover is immediately applied to the can and seamed, vacuum will be formed when the steam condenses. This, therefore, provides a simple, inexpensive method of exhausting the headspace volume of its air.

To accomplish the steam injection, referred to above, specially designed steam ports have been constructed in the can and cover assembly turret or around the seaming head of the closing machine itself. Steam is directed under the cover and into the headspace of the filled can as it is being conveyed to the seaming position and until the cover is assembled tightly to the top flange of the can. A simple illustration of this steam injection principal is shown in Figure IV.

The first commercial installation employing this principle of vacuum formation in containers was in glass jars. Research and development by the Continental Can Company, Inc., resulted in the first commercial adaption of

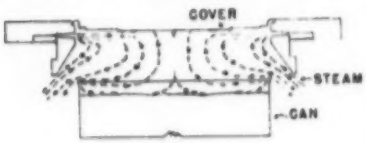


FIGURE 4

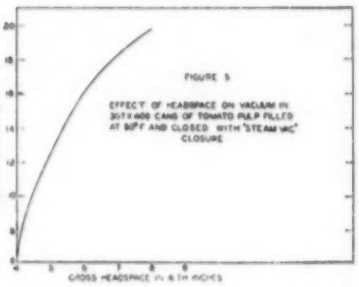
STEAM INJECTION INTO HEADSPACE FOR PURPOSES OF OBTAINING VACUUM

this type of closure for metal containers about 1939. Since that time there has been a wide expansion in the use of steam injection units for many products.

In this discussion, the term "Steam Vac" is used to describe all of the various types of steam injection units normally supplied by manufacturers regardless of their particular trade names.

It is important to understand that the underlying principle of all "Steam Vac" closures is to replace the air in the headspace with live steam as fully as possible at the moment of closure. During this operation the product is not heated, except slightly at the top surface, and little or no occluded air within the product or in the void spaces beneath the top surface is removed by the action of the steam. Consequently, to obtain good vacuum the product must not contain much occluded air at the time of closure, and an adequate and controlled headspace must be provided.

The effect of headspace is illustrated in Figure V, in which cold tomato pulp was filled into 307 x 409 size cans with varying headspaces and closed on a high speed closing machine equipped with a "Steam Vac." Vacuums were taken as the cans were removed from the machine and momentarily chilled in water (70°F.). As you will note, the vacuum increases quite rapidly from 4/16-inch gross headspace to 8/16-inch gross headspace.



The above points are further illustrated in the adaption of "Steam Vac" methods for producing vacuums in canned fruits. Fruits such as peach and pear halves, sliced peaches, fruit cocktail, and pitted cherries contain appreciable amounts of occluded air. When these products were first closed with a "Steam Vac" unit, even with carefully controlled headspaces, the vacuums were very uneven and averaged quite low. When the same products were filled and syruped by means of a prevacuumizer syruper, the vacuums were increased from 3-7 inches and were very much more uniform. In this respect, the "Steam Vac" units are similar to mechanical vacuum closing machines in that for best performance, means of removing occluded air in the void spaces should be provided before closure.

The temperatures to which products are heated before filling also affect the final vacuums resulting from "Steam Vac" closure. In this case, the final vacuum is a combination of the heating effect and the air removal from the headspace by the "Steam Vac" closure. Figure VI illustrates the effect of temperature on the final vacuum in 307 x 409 size cans of

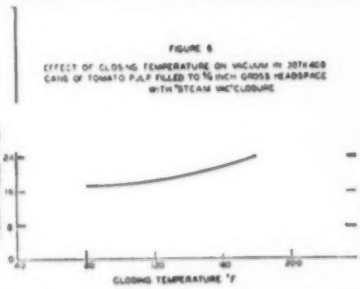


FIGURE 6
EFFECT OF CLOSING TEMPERATURE ON VACUUM IN 307 X 409 CANS OF TOMATO PULP FILLED TO 6/16 INCH GROSS HEADSPACE WITH "STEAM VAC" CLOSURE
CLOSING TEMPERATURE °F

tomato pulp filled to 6/16-inch gross headspace. It may be concluded from these data that if very high vacuums are desired, a combination of heating the product followed by "Steam Vac" closure would be practical.

Preheating of the product prior to filling, or even after filling followed by "Steam Vac" closure has been practiced for some products which contain large amounts of occluded air and other gases. One of the best examples of this is the case of whole kernel corn in brine. This product is commonly heated by means of warm water sprays prior to filling and then closed with a "Steam Vac" unit.

"Steam Vac" units installed on regular closing machines have replaced many exhaust boxes, and in some instances, vacuum closing equipment. They can be operated at most closing machine speeds. They are not adaptable to dry products, but unless unusually high vacuums are required, can produce satisfactory vacuums for most brine- and syrup-packed products, many solid packs, and semi-liquid products.

Summary

To briefly summarize the comparative merits of thermal exhaust, mechanical vacuum closure, and "Steam Vac" closure, a chart was prepared (Figure VII). The terms used in Figure VII are relative and may be broadly interpreted.

FIGURE 7

Factors Evaluated	Thermal Exhaust	Mechanical Vacuum	"Steam Vac" Closure
1. Versatility	Good	Good	Fair
2. Sanitation	Fair	Good	Good
3. Space Requirements	Large	Moderate	None
4. Suitability for High Vacuums	Fair	Good	Good
5. Suitability to High Production Speeds	Fair	Good	Good

It is difficult to draw direct comparisons of the merits of each of the above methods for all of the factors evaluated. This is particularly true for No. 4 and No. 5, and to a certain degree for No. 1. Exhaust boxes can be built long enough to achieve fairly high vacuums (up to 20 inches) and at high production speeds, but at the expense of large floor space requirements. For some products, in order to produce high vacuums, the high closing temperature necessary with thermal exhaust is deleterious to the quality. In the case of mechanical vacuum and "Steam Vac" equipment, high vacuums are contingent upon the degree to which the occluded and dissolved gases have been eliminated from the product prior to closure.

Generally, thermal exhaust means are best adapted to products which can be readily heated, such as liquid and semi-liquid products and syrup- and brine-packed products. However, they are not as well suited for solid packed foods such as meats, fish, and the like, which are difficult to heat, unless special provisions for heating are provided or especially long exhaust boxes are constructed. Vacuum closing machines are adapted to the widest variety of canned foods and will gen-

erally produce the highest vacuum of the three methods discussed. The chief difficulty with vacuum closure usually results from occluded or dissolved air in the product which can be minimized by proper filling of the product into the can before closure or by prevacuumizing prior to closure. "Steam Vac" closures are usually limited to products which do not contain much occluded or dissolved air. Adequate and controlled headspaces are much more important for proper operation of "Steam Vac" closures than for the other two methods. Combinations of thermal exhaust and "Steam Vac" closures or prevacuumizing prior to "Steam Vac" closure will, however, bring the vacuums very close to those obtainable with commercial vacuum closing machines.

Each of the above methods has definite merit for producing satisfactory vacuums in many canned foods. Circumstances and the type of product generally dictate the method employed for most canners. There are some trends away from the use of large steam or hot water exhaust boxes with the adoption of mechanical vacuum closing or "Steam Vac" closures. However, some caution should be exercised in the selection of a method of exhausting air from cans until adequate information has been secured regarding the adaptability of the method to the particular products involved and the conditions under which they are packed. Most container manufacturers have technical staffs who can furnish information in this regard.

Acknowledgment

The author wishes to acknowledge the assistance rendered by various persons of the Research Department, Continental Can Company, in obtaining data and in writing this paper.

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FACTORS INFLUENCING PROCESS DETERMINATION IN AGITATING PRESSURE COOKERS

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Food Machinery Corp.

The technology of canning centers around the sterilizing process. Early sterilizing processes were established by trial and error and it was not until the second decade of this century that food technologists began to study heat penetration and thermal death times as independent variables of the sterilization process. Since that time a tremendous body of data has accumulated relating to sterilization of low-acid products in steam under pressure in retorts.

The times and temperatures used in sterilization are extremely important to both economy and quality. Long low temperature processes permit less production through a sterilizer of fixed size than do shorter higher temperature processes. Long low temperature processes have been generally considered to be more destructive to color, flavor and texture than equivalent shorter higher temperature processes. The immense volume of scientific work on canned food processes by and large has not resulted in retort processes shorter at a given temperature, than those developed at an early date by trial and error. For example Bitting[1] states than in 1896 a commercial process used for cream style corn, presumably in a No. 2 can, was 60 minutes at 250° F. The sixth edition of N.C.A. Bulletin 26-L[2] issued in 1946 indicates a process of 70 minutes at 250° F. for No. 2 cans of cream style corn.

Bitting also states that around 1895 a process of 40 minutes at 240° F. was used for No. 2 cans of peas. Bulletin 26-L gives 35 minutes at 240° F. for No. 2 cans of peas.

It is natural enough to find that the requirements for safe processes in batch still retorts are much the same today as they were years ago. Neither the types of organisms to be destroyed nor the heating rate of the products has changed appreciably, although our detailed knowledge of both heating rates and spoilage organisms has vastly increased.

It was a well recognized fact that even in these early days that theoretically the process time could be shortened and, therefore, production could be increased in retort processing by increasing the retort temperature.

There has been relatively little commercial production in ordinary retorts at processing temperatures above 250° F. The come-up and blow-down time involved in batch retorting tends to limit the benefits of the shorter processes at temperatures above 250° F. Also, at high temperatures the effect of operator error is emphasized in this type of processing. Nowhere is this better illustrated than in the processing of evaporated milk.

At ordinary process temperatures, around 240° F., the difference in time between appearance of the first detectable grain and the production of an objectionable degree of coagulation might, for example, be 2¼ minutes. In comparison, at 260° F., the corresponding time interval would be only about 0.4 minutes.

For purposes of this discussion we may consider that canned foods fall into two classes: Those which heat by conduction, and those which heat by convection. In the case of products which heat by conduction there is a further practical limit to elevation of processing temperature. Relatively speaking, the much more rapid temperature rise of the outer compared with the inner layers of such products causes an increasing differential heat effect in these different layers as the temperature of process rises. The effects on quality as a result of such time-temperature differentials between the inner and outer portions are very obvious: the color of the outer portions, as compared to that of the inner portions, of cream style corn processed at 250° F., in No. 10 cans constitutes a striking example of these effects.

Attacks on Process Limitations

Attacks upon these process limitations have been from three general directions. The most recent has been the attempt to use various physical methods which have been loosely characterized as "electronic." Another method proposed, and used commercially to a limited extent, is product presterilization either by tubular heating systems, followed by aseptic filling and closure, or by other highly specialized heat treatment prior to aseptic can closure. The third method, with which this paper deals, is the method of increasing the rate of heat penetration and uniformity of temperature distribution in a filled closed can by agitation of the contents during processing by various mechanical means. A large number of agitating steam pressure sterilizers of both the continuous and batch types are disclosed in the patent and technical literature. All of these methods have the common objective of increasing the rate of heat penetration and making the temperature distribution more uniform in the can during processing with the resultant uniformity of quality of product in the can. Agitation during processing makes the use of higher process temperatures more feasible. The batch agitating methods are still subject to the same limitation of come-up and blow-down time, and operator error, as the non-agitating batch type retort method.

Several types of steam pressure sterilizers which use mechanical methods of agitating the cans during processing have been employed successfully commercially.

Two types of batch sterilizers used to some extent in the evaporated milk industry employ agitation in which the batch of cans is turned end-over-end at a uniform rate during the process. Another type of batch agitating steam

pressure sterilizer used commercially to a limited extent employs end to end shaking, combined with axial rotation.

The FMC Continuous Pressure Cooker and Cooler uses an intermittant axial rolling agitation while progressing the cans continuously through the unit from the entry to the exit end.

Effects of Agitation

Although it has long been recognized that this type of can agitation accelerates the rate of heat penetration, the complexities of the mechanical structure have presented insuperable obstacles to direct continuous measurement of heat penetration. Until recently the only process work which could be carried out with this equipment was by bacteriological methods. Obtaining adequate process data by these methods was extremely slow and laborious. It has been necessary to develop a complicated and costly device to translate the intermittent rolling motion of the can progressing through the continuous agitating pressure cooker to an equivalent axial rotation during which the rate of heat penetration into the product can be measured. Development of this unit was originally based on high speed motion-picture studies of can motion in a commercial continuous pressure processing unit. Careful bacteriological studies and physical measurement have shown that this device gives heat penetration measurements truly indicative of conditions in the commercial unit.

One of the most vital elements of such devices is the rotating thermocouple lead connector. The type developed for the heat penetration unit represents a very successful solution to the problem of obtaining accurate readings of temperature of products in a rotating can. This connector and the heat penetration unit are useful in connection with any of the types of can agitation already mentioned, except that involving combined shaking and rotation.

Heat penetration determinations for agitating processes involves the consideration of more factors than do those for still cooks. Headspace, fill-of-container, solid-liquid ratio, consistency and the like must all be studied exhaustively to determine their influence on the rate of heating. The degree of agitation is an important factor affecting the rate of heating. Fortunately in the case of the continuous pressure cooker most of the increase in heating rate for many products occurs at low-to-moderate cooker speeds so that a single process specification is applicable for all speeds above this minimum value.

It is somewhat surprising to find that products like pureed peas and cream style corn which normally heat very slowly by conduction may have their heating rates greatly increased by the agitation of the intermittent axial type. These products are fluid enough after filling so that this agitation will induce convection heating; although, after cooling, the starch in these products sets so that mechanical agitation will no longer move the contents significantly. However, in these products the initial product consistency and can headspace are paramount factors in determining the heating rate under any system of agitation; consequently, process statements must necessarily contain limiting specifications on these factors.

The rate of heat penetration in cans of products normally heating by convection may also increase to some degree as a result of agitation. For example, peas in No. 2 cans require a minimum still cook of 15 minutes at 250° F. while the same product processed in the continuous pressure cooker at a can speed of 100 per minute requires a minimum cook of 12 minutes with similar packing conditions.

Weight Factor

Weight of product is a good example of a factor affecting heat penetration. It can be shown that increasing the weight of peas in the can appreciably slows up the rate of heat penetration during agitated processes; therefore, any agitated process statement must include a maximum fill weight limitation.

Vacuum-packed corn also shows an increase in rate of heating when agitated.

Products containing solid particles in suspension, but which tend to settle out during a still process, such as some types of vegetable soup, heat much faster when agitated.

Let us consider now certain bacteriological problems relating to the establishment of process specifications for products agitated during high temperature processing. The most widely used current methods for thermal death time determination involve use of the thermal death time pyrex tube and thermal death time can. At temperatures above about 245° F. the rate of heat penetration into products contained in those tubes or cans is such as to require corrections to be made for temperature lag. Although methods for arriving at such corrections have been suggested,[3] it has been shown [4, 5] that such corrections are invalid for determinations made at temperatures above 245° F. Most thermal death time data available for process determination have been obtained at relatively low temperatures, in which cases the heat penetration was less important. For these reasons it was regarded as essential to develop a means for accurate measurement of thermal death times at temperatures in the higher range (245° F. to 270° F.) which may be employed usefully in commercial agitating processes.

Determining Thermal Death Time

A device for this purpose, called the Thermoresistometer, was developed by Stumbo and described in *Food Technology*.[4] The Thermoresistometer has made it possible to determine thermal death times at temperatures as high as 270° F. Data obtained by the method employing this device are sufficiently accurate to be satisfactorily applied to the calculation of processes employing any temperature up to 270° F. The use of process temperatures between 260° F. and 270° F. appears to be feasible for most products only in continuous agitating pressure processing and cooling equipment. Such equipment eliminates come-up and blow-down times, automatically controls process time and temperature with a great precision, and controls cooling procedures thus minimizing the danger of operator error.

It has been found that calculation of processes for agitating types of cookers is neither simple nor obvious, particularly in relation to products which heat by conduction in non-agitating retorts and become convection heating products under mechanical agitation. Perhaps this problem can be best illustrated by considering canned corn. In the stationary retort whole grain, brine-packed corn heats by convection and cream style corn heats by conduction. The sterilizing value of the convection heating product is expressed conventionally as F=9, while for the conduction heating it is F=5. These products are practically identical in chemical composition and are attacked by the same spoilage organisms, but they heat at different rates. If cream style corn is given an agitated process so that the heating rate is materially increased with accompanying greater uniformity of heat treatment one asks what F value for the process would be required in order for the product to be safe, and why? Conventional consideration would call for the use of a process having an F value of 5.

Early in these recent studies of agitating cooks, this anomaly raised grave questions as to the applicability of conventional process evaluation methods for arriving at process specifications for products in which mechanical convection could be induced. A careful study of the bacteriological considerations involved has led Stumbo [4] in a 1948 paper in *Food Technology* to suggest revisions in the procedures for process evaluation. Such revisions appear to be not only essential in relation to products in which mechanical convection may be induced, but also in relation to many products receiving stationary retort processes.

It is now evident that these procedural revisions are essential to selection of adequate agitating processes, and that the use of conventional methods only may lead to serious insufficiency in agitating processes. On the other hand, the use, in continuous agitating pressure cookers, of processes designed for non-agitating batch retorts results in over processing of many products.

It has been quite universally presumed that short high temperature processes will produce better product "quality" than will lower temperature processes of equivalent sterilizing value. This is supposed to be due to the relatively greater increase at the higher temperature in the rate of bacterial destruction as compared with the increase in rate of degredation of desirable physical, chemical and nutritional values in canned foods. A typical generalization appears in C. O. Balls review, "Advancement in Sterilization Methods For Canned Foods,"[8] published in 1938. He suggested that whole grain corn of better than commercial quality probably could be produced by processing at 300° F. Of course, the physical limitations of the container would prevent sterilization in the closed can at such temperatures.

Factors That Constitute Quality

There are many factors which go to make up quality and even multiple factors which are responsible for quality sub-divisions such as color, flavor and texture. It would be surprising if all of these behaved uniformly at widely different processing temperatures. There are reasons for believing that quality improvement obeys the law of diminishing returns with respect to quality improvement through the use of higher process temperatures. In canned peas and corn, for example, the texture desired by some packers may not be attained by a 260° F. process which is just adequate to accomplish sterilization. Some sacrifice of color may be required to obtain the best texture in these products. Also, there has frequently been too little consideration of the effect of storage on some of the more delicate flavors which may be present immediately after processing. Vacuum-packed corn processed at extremely high temperatures has, immediately after processing, a very appealing fresh flavor which, unfortunately, is lost to some degree during the early months of storage. Similarly, peas can be sterilized at such high temperatures as to leave the original color practically unchanged at the end of the process, but the advantage in color is rapidly lost during storage at ordinary temperatures. In spite of this observation, it appears generally true that color degredation is reduced as the processing temperature goes up. A study has been made of the effect of time and temperature of process on the color of evaporated milk by methods similar to those used for thermal death time determinations. This study showed that the production of a given color change as measured on a spectrophotometer followed a logarithmic law. However, the slope of the curve indicated that at high processing temperatures less color change will be encountered than at lower processing temperatures. This color is also somewhat unstable and color degredation occurs at a slow rate during ordinary storage. Both of these color changes occur much more slowly at lower storage temperatures.

It appears probable, under present conditions of storage and marketing canned products, that there is relatively little quality advantage in the use of the ultimate extreme of process temperature. Agitating process temperatures in the ranges between 250° F. and 270° F. will produce in most cases a more satisfactory balance between various quality factors than still higher temperatures. The stability of quality produced by processes in these temperature ranges appears greater than that obtained by processing at more elevated temperatures.

These processing temperatures are well within the capabilities of continuous pressure processing equipment built under A.S.M.E. standards. However, in order to avoid paneling, some preheating of well exhausted or large diameter cans may be necessary before introducing them into continuous pressure cookers operated at the upper end of this temperature range. It appears probable that optimum stability of produce quality can be obtained for many canned foods at sterilizing temperature ranges between 250° F. and 270° F., ranges which are well within the capabilities of commercially available continuous pressure processing equipment.

Effect on Physical Characteristics

Questions frequently have been raised concerning the effect of agitation during sterilization on physical characteristics of canned foods. The development of cloud and sediment in canned peas and curdling in cream style corn are examples. This year, methods of preparation of cream style corn have been developed which appear to prevent curdling. Development of pea cloud recently has been clearly shown to be causable by high rotational speeds for excessive times in handling inadequately cooled cans, after full sterilizing processes have been applied. The speeds necessary to produce cloud are definitely not reached in continuous pressure cookers at the maximum speeds in current use, but are frequently encountered in runways leading from the can cooler directly to labeling and casing equipment. The amount of cloud and sediment is roughly in direct proportion to the length and speed of roll and to the product temperature. The effect of rolling is small if peas are cooled to 90° F. prior to rolling.

Experience has shown that the brine of canned peas processed in continuous agitating pressure cookers may be as clear or clearer than the brine from similar peas processed in stationary batch retorts if proper processing, cooling and can handling methods are employed. The use of non-agitating, batch retort process time and temperature specifications for peas processed in agitating continuous pressure cookers results in "over-processing" from the bacteriological standpoint. This degree of over-process is, however, far less significant in relation to the production of cloud in canned peas than is undercooling, high speed rolling, and rough handling. A few products such as all green asparagus, however, have a more rapid rate of physical softening during processing than peas. The extension of time of process in agitating cookers beyond that required for adequate sterilization not only subjects such products to increased heat softening effects, but also unnecessarily prolongs the agitation of the softened products.

Significance of Product Breakdown

Product breakdown does not necessarily demonstrate the inapplicability of the agitating pressure cooker to the processing of that product, but may only indicate improper use of the cooker. The texture of such products is often improved and breakdown lessened by the use of agitating processes in the higher practicable ranges. Most canned vegetables are very tender after any method of processing, and it is preferable that they be conveyed by a means other than rolling from the cooler to labeling and casing equipment. With quite reasonable precautions no more physical breakdown is encountered in continuous processing than in batch processing.

It seems crystal clear that material improvements in canned food quality can result from the proper use of agitating processes. The safety, production speed, and economy inherent in continuous pressure cookers and coolers combined with the possibility of using temperatures in an optimum quality producing range make this type of unit particularly attractive.

The previous lack of adequate means for determining the rate of heat penetration, the limited value of existing thermal death time and rate of destruction data for high temperatures, and the inadequacies of conventional process evaluation methods have until recently prevented full development of the potentials of this equipment.

Process information for the continuous agitating pressure cooker is still limited to certain standard commodities in certain standard can sizes. Fortunately the necessary ground work in process evaluation methods is now far enough advanced to allow reasonably rapid progress with reference to additional products and can sizes. Proper processing in agitating pressure cookers cannot be accomplished without adequate control of variables in the preparation of the canned food to be processed, and the use of correct processing conditions. The use of special processes for agitating cookers should never be attempted without adequate advice from those skilled in the use of agitating pressure cookers. However, experience and experiment alike have shown that the proper employment of continuous agitating pressure cookers and coolers can produce unsurpassed quality in most canned foods at low cost.

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NUTRIENT RETENTION IN CANNING

By E. J. Cameron, N.C.A.; R. W. Pilcher, American Can Co.; L. E. Clifcorn, Continental Can Co.

It has been well established that the nutritive contributions of foods at the time of consumption may be conditioned by operations involved in preparation for the table or in commercial food processing, production, preservation or storage of the foods. Home food preparatory procedures such as boiling, baking, broiling or roasting employed to render raw foods edible or acceptable have been found to reduce the amounts of certain nutrients initially present in the raw materials. In fact, much of the nutritive value of raw foods may be lost in home preparation and a good deal remains to be done with respect to education of the homemaker towards approved methods of food preparation. It has become increasingly evident that the nutritive values of foods should be considered on the "as served" basis, rather than from the standpoint of the initial nutrient compositions. Operations in commercial milling, dehydration, freezing, canning or other food production or preserving industries employed to attain conventional or mandatory food quality characteristics or to insure the success of the operation, have also been found to affect the nutritive contents of raw foods.

The mechanisms which may cause these decreases in initial nutrient composition of home or commercially prepared foods may be physical or chemical in character, or a combination of both. Physical effects include the removal of food tissues by mechanical means or the extraction of water-soluble nutrients. With respect to the vitamins, the most frequent chemical changes are commonly believed to be oxidation and hydrolysis which are favored in some operations by heat or by enzymes or enzyme systems released by disruption of tissue cells. Effects on amino acids or protein have also been described but these changes as well as those occurring in proximate composition are relatively less important in the practical nutrition of the American or Canadian consumer. Changes in nutrient composition during the holding or storage of raw, cooked and processed foods have also recently been reported.

The war, together with the prewar preparedness program gave emphasis to establishing the nutrient composition of all classes of foods. This highlighting of food composition caused varied reactions within elements of the food industries concerned, the canning industry included. Some held that changes in nutrient composition during commercial food processing were inevitable if the final products were to be wholesome or edible, meet existing regulations and receive consumer acceptance. Under these circumstances it was felt that the changes in nutrient composition during commercial manufacturing operations was being over-emphasized. Most canners, however, felt that not only should the nutritive values of their products be established but also that the basic canning operations utilized be studied to determine how improved retention of essential nutrients might be effected. This philosophy has largely dictated the pattern and course of the current National Canners Association—Can Manufacturers Institute nutrition program since its inception in 1942.

Retention of nutrients in foods during home or commercial preparatory or handling procedures have long been of interest to certain professional or public health groups upon whose advice or guidance a substantial portion of the consuming public depends. As one manifestation of this interest, the National Canners Association was invited to prepare and present a paper on nutrient retention during canning before the Food and Nutrition Section of the American Public Health Association at its annual meeting in Boston in November, 1948. Such a paper was prepared and delivered under the above authorship and should appear in the *Journal of the American Public Health Association* during the current year. The manuscript was based on data obtained both in the N.C.A.-C.M.I. Nutrition program and separate investigations carried out in the laboratories of the authors. Because the data finally tabulated were of direct interest to this group, permission was sought and kindly granted by the A.P.H.A. to present this abbreviated edition of the paper prior to publication of the complete manuscript.

Over-All Vitamin Retentions

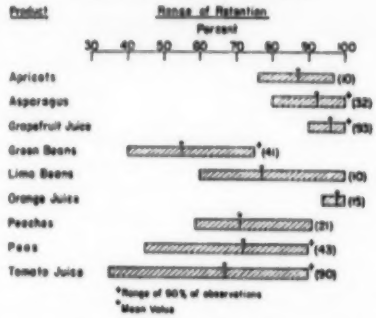
The so-called "over-all" vitamin retention during canning reflects the degree of vitamin conservation attained during the sequence of operations required to convert the raw material into the finished canned product. The literature contains many reports purporting to show the over-all effects of canning on vitamins in foods. Analysis, however, will reveal that many of these studies involved only small scale laboratory packs rather than commercial samples, and also that the experiments could not be considered as adequately controlled. For the purposes of this presentation only vitamin retention data were used which had been obtained during actual commercial operations and these data have been summarized in the accompanying figures.

Figures 1 through 5 present graphically the over-all ascorbic acid, carotene, niacin, riboflavin and thiamine retentions observed in a number of products during actual commercial canning operations. The products chosen for this illustration are subjected during canning to a rather wide variety of operations which conceivably could influence vitamin retention. The over-all vitamin retentions observed in the commercial canning of these foods should therefore reflect the general situation with respect to conservation of these essential nutrients. For the purpose of this exposition, no distinction was made in certain instances for style of pack or variety. The data shown for asparagus may include both white and green asparagus packed as whole spears or cuts; Alaska and sweet peas have been considered together, and the available data observed for all varieties of green beans packed as whole beans or cut beans have been grouped.

The respective bar graphs on each figure show the percentage range of retention found; the heavy vertical line within each bar marked by the small circle indicates the mean retention value; and the parenthetical figure at the end of each bar shows the number of observations made. As indicated by the parenthetical figures, the amount of available data varies

FIGURE 1

OVER-ALL ASCORBIC ACID RETENTIONS

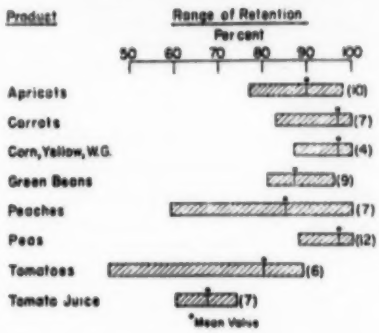


from four observations made on the over-all retention of carotene in yellow corn to 93 on the retention of ascorbic acid in grapefruit juice. Where 30 or more observations were available, frequency distributions were calculated and the bar graphs shown represent the figures within which 90 percent of the observations were found to fall. By this procedure, observations which were unusually favorable or values which were so low as to indicate atypical conditions were eliminated from consideration.

With respect to over-all ascorbic acid retention, the data (Fig. 1) indicate that the canning procedures used for asparagus and the citrus juices effect very high retentions of the nutrient; for the latter products the mean retentions were more than 90 percent. The range of retention in tomato juice is more variable as in the case with products subjected to relatively severe blanching procedures such as green beans, Lima beans and peas. In all the products shown, however, the percentages of ascorbic acid retention may still be considered substantial especially if translated into the percentages of the daily adult requirement for ascorbic acid supplied by a usual or convenient serving of the foods. The data on carotene retentions (Fig. 2) substantiate the known fact that commercial canning procedures have only slight effects on this

FIGURE 2

OVER-ALL CAROTENE RETENTIONS



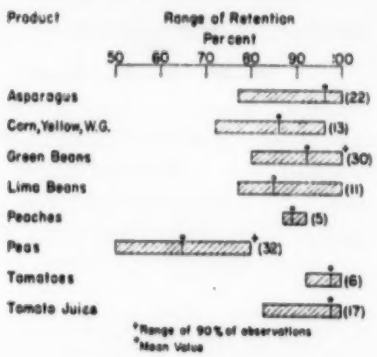
factor since the mean carotene retentions range from about 70 to 98 percent.

The data on niacin retentions (Fig. 3) suggest that for most of the products listed the canning procedures involved have little influence on this nutrient. The lowest mean niacin retention was about 65 percent in the case of peas. For the remaining products, mean niacin retentions in excess of 80 percent were observed. Riboflavin retentions (Fig. 4) during canning are to be considered excellent from the standpoint of the ranges of retention and the indicated mean retentions, all of which exceeded 80 percent.

Great variability in over-all retention is to be noted in the case of thiamine (Fig. 5). This factor is heat-labile and is also known to be extracted from foods during blanching operations. Acid products such as peaches, tomatoes, and tomato juice which do not require blanching during preparation and which are customarily processed at 212° F. show high mean retentions of thiamine (75 to 95 percent). The low acid products subjected to blanching operations, to more severe heat processes or to both show more variable ranges of retention and, in general, lower mean retentions. None of the products considered, however, may be regarded as an outstanding source of this nutrient in the raw state.

FIGURE 3

OVER-ALL NIACIN RETENTIONS



Retentions During Blanching

In addition to studies on over-all nutrient retentions, surveys have been made of specific canning operations to determine which steps during the preparation and processing of canned food products should be of most serious concern. Such step by step studies have revealed that blanching required in the canning of certain products is one of the operations where sacrifice of vitamin content may occur.

The abundance of information revealed in the N.C.A.-C.M.I. surveys of specific operations of vegetable canning procedures, together with information obtained in the laboratories of the authors, both published and unpublished, has been summarized and condensed into figures showing the retentions of these specific nutrients during blanching described for asparagus, green beans, Lima beans, peas and spinach. In Figures 6, 7, 8 and 9, the results of all of the commercial blanches studied are presented in graphical manner. As in the previous figures on over-all vitamin retentions, the same conventions with respect to handling of data have been observed.

Ascorbic acid retentions during blanching (Fig. 6) reveal the best retentions for asparagus (mean—95 percent) while the lowest and most variable retentions are to be observed for spinach (mean—67 percent). To

FIGURE 4

OVER-ALL RIBOFLAVIN RETENTIONS

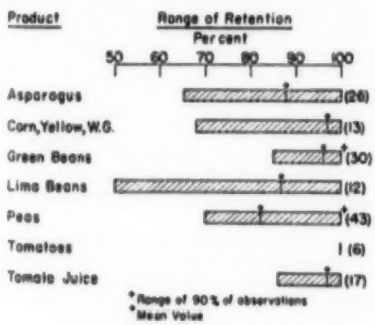


FIGURE 5

OVER-ALL THIAMINE RETENTIONS

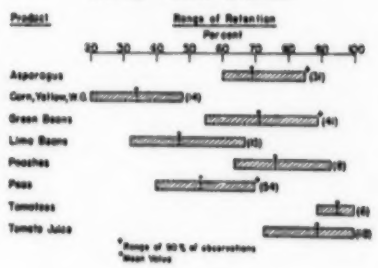


FIGURE 6

ASCORBIC ACID RETENTIONS DURING BLANCHING

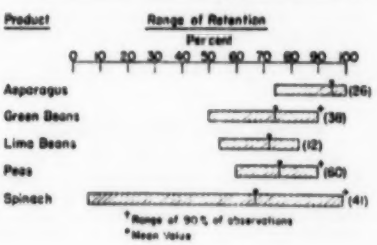


FIGURE 7

NIACIN RETENTIONS DURING BLANCHING

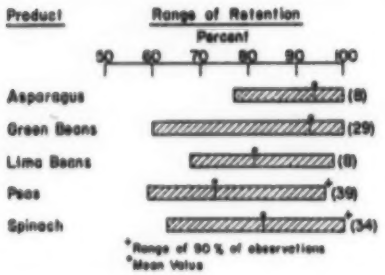


FIGURE 8

RIBOFLAVIN RETENTIONS DURING BLANCHING

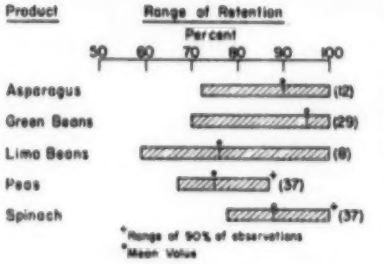
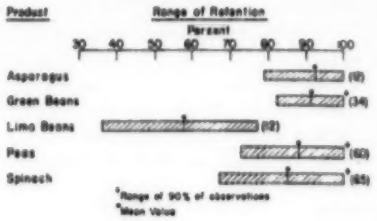


FIGURE 9

THIAMINE RETENTIONS DURING BLANCHING



explain these variations, one has to know only that the comparatively small surface area of the asparagus, combined with the relatively short blanching time for the product would tend to increase retentions. In contrasting comparison, spinach is a product with a thin, extensive surface area due to its leaf-like character and also, considerably more severe blanching conditions are imposed producing optimum conditions for solution of water-soluble materials.

The retention of niacin during blanching (Fig. 7) indicates that niacin is more firmly bound in the products studied than ascorbic acid since the retention generally seems to be of a higher order. It would appear that this vitamin in raw materials is not as water-soluble as other members of the vitamin B complex. Mean retentions of this nutrient for most of the products were in excess of 80 percent. Riboflavin retentions during blanching (Fig. 8) are rather good in most vegetables with the exception of Lima beans where the range is rather wide. Lima beans and peas showed mean retentions of this nutrient for most of the products were in excess of 80 percent.

The retention of thiamine during blanching is portrayed in Figure 9. One of the most significant observations in this chart is the low retention of thiamine in Lima beans averaging 58 percent with a range of retention for this specific operation of 36 to 77 percent. While niacin and riboflavin retentions for all five vegetables listed were generally of the same order, the retention of thiamine in Lima beans dropped to a mean of 58 percent as compared to averages of 76 and 81 percent for riboflavin and niacin, respectively. While the data presented may be influenced by the number of observations involved, this finding might warrant further investigation.

Retention During Thermal Processing

The heat-labile properties of thiamine introduce the problem of retention of this vitamin during the heat sterilization of canned foods. Other nutrients seem to be little affected by this operation. The effect of the pH of the product being processed is of importance, although there is a difference of opinion as to the specific importance of this variable upon thiamine retention during heat sterilization. It has been observed that, generally, products such as tomatoes and tomato juice, which are sterilized at relatively low temperatures because of their low pH, have a high degree of retention of thiamine while low retentions are found in products such as whole kernel corn. These low retentions may be explained by the relatively severe heat process necessary for sterilization of low acid foods.

In evaluating the effect of thermal processing upon the thiamine content of foods, the major variable is the time and temperature relationship of the heat sterilization. This relationship is, in turn, affected by different can sizes and the nature of the product, with particular reference to whether heat transfer occurs by convection or by conductance during thermal processing. Typical data showing typical thiamine retentions in vegetables as affected during commercial processing are listed in Table I.

TABLE I

Stability of Thiamine During Thermal Processing of Several Vegetables

Product	Process		Can size	Retention during sterilization process
	Min.	°F.		*Per cent*
Asparagus				
Whole spears	14	248	300	66
Center cuts	14	248	300	63
Fancy cut	14	248	300	64
Corn, whole kernel				
White	30	250	2	31
Yellow	30	250	2	47
Green Beans				
Whole, No. 3 sieve size	20	240	2	79
Cut, No. 4 sieve size	20	240	2	73
Lima beans				
Standard	30	240	2	71
Extra standard	30	240	2	58
Peas, sweet				
Unsieved, Fancy	35	240	2	67
Unsieved, Fancy	45	245	2	60
Unsieved, Standard	35	240	2	67
Unsieved, Standard	45	245	2	67
Tomatoes	35	212	2	89
Tomato juice	20	212	2	74

Improved Vitamin Retention

Since blanching is a major factor conditioning vitamin retention in canning, it has been a point of emphasis in improvement studies. Experiments are underway at the present time within the industry with new types of experimental blanchers embodying principles which offer definite advantages in commercial blanching. With respect to existing equipment, studies on the effect of the time and temperature relationships in hot water blanching have revealed that the high temperature-short-time blanches generally are superior from the standpoint of maximum vitamin retention. In all instances this type of blanch yielded the same product quality as obtained by low temperature-long-time blanches. In a few instances, particularly with green beans, the short-time-high-temperature blanch is definitely superior from a quality standpoint. It may be concluded that more detailed attention to the time and temperature relationship in hot water blanching, more extensive use of steam blanching, and possibly equipment improvement will reduce significantly the sacrifices of water-soluble nutrients during this particular step in the preparation of products for canning.

New principles such as non-aqueous or steam pressure blanching have been studied which would require radical changes in existing equipment. While preliminary work has shown that favorable ascorbic acid retentions may result from application of these new principles, their effect on final product quality may be questionable and remains to be established.

With respect to improved retention of heat-labile factors such as thiamine, the tendency of the canning industry is to employ more high-temperature-short-time processes. The value of such processes for thiamine preservation has been shown in previous literature. Figures 10, 11 and 12 are taken from the studies of investigators working with conduction-heating meat products of relatively high thiamine content.

In Figure 10, is shown the effect of increased can size on vitamin retention for the same product. As can size increased, the degree of vitamin retention decreased due to the rela-

FIGURE 10

Effect of Container Size on Vitamin Retention in Pork Luncheon Meat [a] [b]

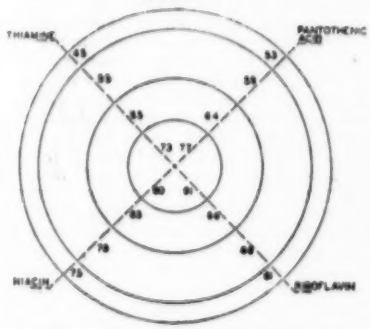
Can size	Thiamine	Riboflavin	Niacin	Pantothenic Acid
12-oz.	73-76	86-95	89-97	62-73
2½-lb.	46-60	71-81	71-81	62-68
6-lb.	38-40	67	73-75	70-73

[a] % Retention of vitamins after processing.
[b] Greenwood *et al.* (1944).

tively more severe heat processes necessary to sterilize the product in the larger can sizes.

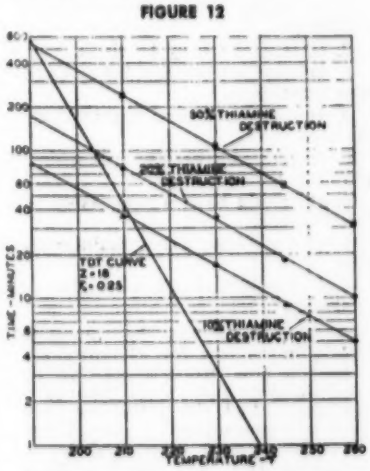
Figure 11 shows the relationship existing between vitamin retention at the periphery of the container and retention of the same vitamin in the center. A gradient of vitamin retention exists in products heated by conduction with higher retentions being observed at the center of the container.

FIGURE 11



Influence of position in 2½-lb. can on % B vitamin retention during heat processing (Greenwood *et al.*), 1944.
Cross-sectional sampling of a 2-inch cylinder of meat mid-distant from ends of a 2½-lb. can. Processed 148 minutes at 235° F.

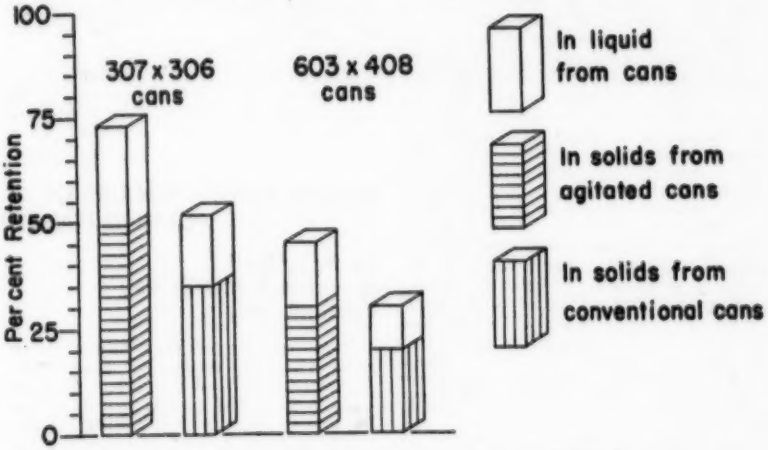
FIGURE 12



Comparative effects of time and temperature on destruction of thiamine and certain bacterial spores (Greenwood *et al.*), 1944.

Figure 13

Retention of Thiamine in Vacuum Pack White Corn Processed by Agitated Can and Conventional Methods

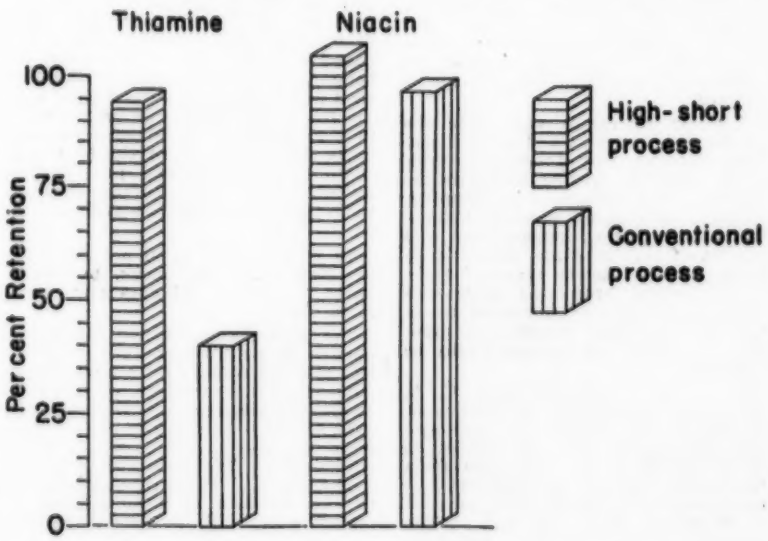


This situation is due to the fact that during long heat processes the portion of the product adjacent to the walls of the container receives a more severe heat treatment than that at the center of the can.

Work has been done also on the sterilizing value of the process (F_0) with respect to thiamine retention (Fig. 12). This figure shows that with each 18° F. rise in process temperature the rate of thiamine destruction is approximately doubled while the rate of destruction of the bacterium—whose thermal death time curve is shown—is increased approximately tenfold. These data suggest that increased thiamine retention will result from application of high temperature-short-time thermal processing schedules wherever possible. This work has been confirmed by recent studies in which thiamine retentions in cream style corn and vegetable

Figure 14

Effects of High-Short and Conventional Processing on Vitamins in Cream Style Yellow Corn



puree sterilized by high-short and conventional processing methods were compared.

New methods for agitation of foods during processing also have shown improved thiamine retention over conventional processing techniques. Agitation during processing increases the rate of heat penetration into the container so that application of the necessary effective heat is attained in shorter time with increased retention of thiamine. Figure 13 shows the beneficial effects of agitating processes over conventional methods on the retention of thiamine in vacuum packed corn. Similarly, products which can be pumped or flash-sterilized in tubular sterilizers have a higher degree of thiamine retention than the conventionally processed products as shown in Figure 14, where the product cream style corn was studied. Extended use of the high-short and agitating types of process should result in even greater retentions of heat-labile nutrients than is now accomplished commercially.

Summary

Both in home and commercial processes certain operations are necessary to render food edible or attractive, to attain required or desired levels of food quality, or to insure the success of commercial food processing or preserving procedures. Factors causing changes in nutrient composition may be chemical or physical in nature involving loss of certain food tissues by mechanical separation or solution of water-soluble components. Alterations in proximate composition are usually less significant nutritionally than those affecting vitamin composition. Due to emphasis currently laid on nutrient composition of packaged foods, producers have found it desirable not only to establish the nutritive values of their major food items, but also to study manufacturing operations to determine how increased retention of essential nutrients may be effected.

Vitamin retentions vary with the product and nutrient under consideration, however raw products significantly high in specific nutrients remain significant sources after canning. Certain operations, notably blanching, are subject to improvement and studies of this type are currently in progress. The newer types of high-short thermal processing show considerable promise of improved retention of heat-labile vitamins in products to which such processes may be applied.

In a recent talk, Professor C. A. Elvehjem stated "The establishment of values for products as consumed has encouraged many industries to study possible losses resulting from the processing methods and to investigate procedures which might be used to eliminate these losses. . . . The canning industry has been especially effective in recognizing these principles and has done much to use these principles in an effective nutrition program. . . . The producers, the food processors and the food technologists can do much to make available the figures for the composition of all the components of the human diet. . . ."

The members of the canning industry responsible for the sponsorship and administration of the National Canners Association-Can Manufacturers Institute Nutrition Program naturally are pleased by such a statement regarding the program. It is hoped that when the program is concluded, everything will have been done, within the limitations imposed, to deliver to consumers canned foods of highest possible nutritive composition. It is also hoped that the pattern set in the N.C.A.-C.M.I. nutrition program may be useful to other food industries in similar studies on the nutritive quality of their products.

OBSERVATIONS ON USE OF STAINLESS STEEL AND CHROMIUM PLATING FOR THE FOOD INDUSTRY

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The purpose of this paper is to show canners, especially those who do not employ food technologists, that the selection and proper use of stainless steels for food handling equipment, and the use of chromium plating for protection of both food and equipment, is neither a complicated nor difficult matter. The advantages of the use of stainless steels, and of chromium plating, in the processing of food, are great and should not be overlooked by even the smaller canners.

To select and use stainless steels in the plant, and to have parts of the machinery that come in contact with food, or are subject to wear, chromium plated, or even to chromium plate them in the plant maintenance department, one does not need to be a chemist, a metallurgist, a corrosion engineer, or even a food technologist. One does need to have an enthusiastic interest in his product and his plant, and be willing and able to use the free information and published data of manufactures, and the data to be found in a few books which should be bought. But canners themselves must send for the manufacturers' data, buy the few books, select the proper man in the organization to take charge, make intelligent use of the technical salesmen who call and provide the initiative and follow-through to keep the project eternally alive and checked on.

In this paper, I shall not draw on personal experience alone, but shall name the sources of data and draw from them.

For your encouragement and guidance in the selection and use of stainless steels, I would first commend for your study an excellent, comprehensive, authoritative, yet easily readable, article to be found in the journal *Food Technology*, Vol. 1, No. 3, 1947, published by the Institute of Food Technologists. This article was written by Richard C. Cunningham, a metallurgist, with Industrial Steels, Inc., Cambridge, Mass., and was read by Mr. Cunningham before the 1947 annual conference of the Institute of Food Technologists held in Boston.

In an article of only eight pages, Mr. Cunningham has of necessity had to generalize. He states: "In this paper, we are to discuss the usage of stainless steel as a material of construction for plant equipment in the food processing industry to achieve sanitation and corrosion resistance. It becomes necessary therefore to consider such widely different problems as those involved in the processing of milk and dairy products, canned vegetables and soups, fruit and fruit juices, meats, candy, bakery products, and beverages. * * * What material will be *satisfactory* for the equipment in a certain process? * * * Do we want the lowest initial cost? Do we want the greatest freedom from contamination? Do we want the highest strength-weight ratio? Do we want maximum corrosion resistance?"

Mr. Cunningham then sets up the following requirements which stainless steel should meet:

1. It must not contaminate the products.
2. It must be easy to clean.
3. It must not be corroded by operation conditions.
4. It must have good physical properties.
5. It must be readily available in required forms.
6. It should have a reasonably low initial cost.
7. It must have a low maintenance cost.
8. It should have an attractive appearance.

A canner should be interested vitally in reading Mr. Cunningham's thesis on how properly selected and used stainless steels meet these specifications. And the following statement is encouraging: "Of the 28 types of stainless steel recognized by the American Iron and Steel Institute, four (Types 304, 316, 303, and 404 FM) are discussed as being of major interest in the food industry. These meet seven important specifications.

One important requirement, ease of fabrication, is being steadily improved." This last sentence regarding ease of fabrication, comes under number four of the eight specifications listed above: "It must have good physical properties".

In quoting from Mr. Cunningham's paper, the aim has been to draw attention to this source of information. By study of this paper one may learn what gives stainless steel its corrosion resistant properties, and how it meets the eight general requirements of the food industry.

There are other sources of information, all made easily readable for the busy executive, with tables of properties from which the executive can pick the type built to meet his specific requirements. This information is free, and to receive it one has only to write to such manufacturers and suppliers as Eastern Steel Corporation, Baltimore, Md., Republic Steel Corporation, United States Steel Corporation, Lukens Steel Corporation, Industrial Steels, Inc., to name a few sources whose data sheets and hand books are used by the author of this paper. Again, I would point out that the modern technical salesmen are a powerful educative factor in our industry. We need to take them more seriously and use them intelligently, recognize that they are specialists, and not hesitate to require of them information that we do not have.

Canner-Supplier Dual Burden

There is a dual burden to be faced by the canner and the supplier of stainless steel equipment. First the canner must analyze his problem and know what he wants when he places his order for the equipment. The canner and his purchasing agent should inform themselves as to the properties of the several stainless steels and select the one that meets the use requirements of each piece of fabricated equipment they wish to buy. They should keep in mind that money can be saved by purchasing chromium iron for certain uses, and that for certain uses such as bearings operating under corrosive conditions, chromium irons have particular application. The use of the equipment dictates the type of steel to select, but the canner should not forget that he shifts equipment around, and therefore must consider all the uses to which he intends to put the equipment. In this instance, the almost universal utility of Type 316 S Mo for uses of the food industry requiring corrosion resistance together with adaptability to fabrication should be particularly studied.

Second, the supplier of stainless steel equipment must accept the burden of knowing to what use the purchaser intends to put the equipment. It is not sufficient for suppliers to accept an order for six 100-gallon stainless steel kettles, and without question make them up with ordinary 18-8 and ship them. He has a responsibility when a month later the kettles have developed corrosion and pitting along the weld lines, and he finds that the customer uses them for handling brines under aerating conditions.

Stainless steel came into general use in the canning industry only 15 years ago. Much equipment containing copper and copper-bearing metals with their facility for discoloring food products still is found in the industry, and still is being supplied to the industry. One hastens to add that this is no condemnation of copper-bearing metals used in the proper place and under the proper conditions. The canner should challenge the universal use of such equipment, however, and keep in mind that some products are susceptible to discoloration by small amounts of copper, as low as one part per million.

Food handling equipment containing copper, brass, or other copper-containing alloys can be protected against corrosion, and the products passed through them can be protected against a cause of discoloration and loss of flavor and vitamin C, by plating the contact surfaces with chromium.

As in the case of information regarding the use of stainless steel, I shall not draw on personal experience alone, but name the sources from which data were drawn.

First, an agressive, intelligent canner need not be discouraged from going into the matter of chromium plating the food-contact parts of his canning machinery. Especially in deciding whether presently ruined equipment should be discarded and new purchased, or new equipment made of less expensive metals than stainless steel be purchased and the contact parts chromium plated, the canner should be willing to do some study and experimenting.

The canner should know first what he wants. He may have discoloration of his product due to pick-up of small amounts of copper. He may have pitting and therefore a sanitation problem. He may have corrosion and wear with consequent destruction of the equipment. He may be faced with the financing of an expensive all-stainless job with moving parts in contact with one another, when he needs only mild steel for the purpose if the food contact parts could be protected by plating.

Chromium plating can satisfy most of these wants. But an old excessively pitted food contact machine part is difficult to seal off with any plating job and give a sanitary job. It should be kept in mind that in plating basis metals with corrosion-protecting overcoats, the aim is to arrive at a firmly adhering non-porous coat on the basis metal. Two main considerations kept well in mind accomplish this: A clean, surface-smooth basis metal, and a thick coat of nickel or chromium alone, or nickel overlaid with chromium. The pores in nickel or chromium plating disappear with increasing thickness of the coating. Even close-grained cast iron can be nickel and chromium plated if the basis metal is made clean and smooth enough, and a thick enough overcoat is properly laid on. Such plating of cast iron, with the attending expense of cleaning and smooth-surfacing such a porous metal, is often considered impractical. The writer, however, has done it and achieved good results. Again, a clean smooth surface and a thick overcoat of protecting metal are the two outstanding considerations. The cleaning and plating procedures themselves, the solutions used, current densities, times and temperatures in the bath, handling of health hazards, control of chemical strength of bath constituents, are all well standardized. There is no magic involved, and an ordinary good workman can run the whole show. The canner should consider that outside of the large organizations that do decorative plating for the hardware and automobile industries few commercial electroplating establishments have chemists on the staff.

Purpose of Electroplating

The canner, and the food machinery manufacturer too, should keep in mind that most commercial electroplating is done for decorative purpose. Protection against corrosion of food machinery, sanitation, and food quality are considerations met with chiefly in the food industry. If a commercial electroplating company is entrusted with meeting these requirements, it must be given firm specifications for the work, and the results must be rigidly checked.

On brass, the deposition of thick coatings of chromium, without discontinuities such as pores and cracks is not as easy as on steel, and thick coatings are more expensive to apply than the decorative ones, yet with practice it can be done with excellent results relative to the requirements of the food industry. Prior application to the basis metal of a thick coat of more easily deposited nickel, which requires a relatively small current density, gives economy and good corrosion resistance, and seals underlying copper containing metals away from the food product. Nickel alone is relatively soft and wears away too rapidly when exposed to moving foods of high friction coefficients. Therefore, the protecting nickel coat may in turn be protected by a relatively thin coat of hard chromium. The polish on an electrodeposited chromium coat is a function of the polish on the basis metal. Therefore a good

polish on the softer and easily polished nickel gives a good sanitary polish on the finished chromium which requires no further polishing. This is important, because chromium being extremely hard is expensive to polish. This hardness is one of its virtues in giving wear resistance to plated machine parts. The author, however, has achieved good results with direct deposition of chromium on properly prepared steel and brass. The time of service before replating is required is however not nearly as long as when the nickel undercoat is used. Also, the problem of irregular thickness of chromium coating is more serious when depositing directly onto brass than when depositing onto steel or nickel. This is important when one considers that the first failure of a protective chromium coating takes place at the thinnest cross section.

A good time to chromium plate canning machinery used for seasonal packs is at the time of overhauling for repairs. Cream style corn fillers over 30 years old may be overhauled and chromium plated with only a decorative thickness laid on in 25 minutes in the plating tank, directly onto the brass pistons, cylinder walls, cylinder block, etc. Such jobs last for three seasons with good results on cream style corn which is very sensitive to as low as 2 parts per million of copper. A similar coating is efficient when used with clam chowder and clam juice, products which are much more sensitive than corn to discoloration by copper.

A coating of nickel or chromium or nickel overlaid with chromium, to be really effective and long lasting in food work, should have a minimum thickness of 30 microns; this means over all the surface to be protected. Chromium does not "throw" (plate out evenly) very well, and practice is needed in making anodes from 6 percent antimonial lead, of various shapes and designs to fit the cathode job, together with special jigs to hold them in the bath in proper relation to the job. This is an art that must be learned by working on the various designs of machines, such as fillers, syrupers, fish hash stuffers, pumps, etc.

The protection of stainless steel moving surfaces from galling can be efficiently attained by chromium plating one moving member. This is now being done in the heretofore difficult job of making a plug cock of all stainless steel that will not seize and gall on being turned on and off a few times.

In a brief paper it is not possible to go into the desired details of cleaning and degreasing solutions and tanks, cleaning by mechanical means following chemical cleaning, eliminating oxide films, plating bath compositions and plating procedures. These details can best be gathered by the canner from a few readable books, passages from which will be quoted below. No one can give another an education. Each learner in life must make himself free by taking on his own responsibilities. This is certainly true in electroplating, which can be treated in great detail by very complicated scientific approaches. But the plating itself is still largely an art and is usually not in the hands of a scientist, but of an artisan.

A small, very readable book written by J. Rosslyn, entitled "Electroplating and Anodising" and published by the Chemical Publishing Co., Inc., Brooklyn, N. Y., is an encouraging book for the canner to read. Mr. Rosslyn states of plated chromium: "It is a protection against corrosion which when combined with a suitable nickel undercoating, will not oxidize, is extremely hard, is not affected by intense heat, will last a life time on most goods, resists most acids, is not affected by organic chemicals or alkalies." Mr. Rosslyn has included in his book many good illustrations of equipment, dimensions and details of bath construction, plating solutions and procedures, and a very helpful section on the symptoms, causes and cures of plating troubles.

Dr. H. H. Uhlig in his "Corrosion Handbook" sponsored by the Electrochemical Society, Inc., and published by John Wiley & Sons, Inc., New York, includes a very good section on "Nickel and Chromium Coatings". He states: "Chromium plating practice is quite well standardized. The plating conditions exert some influence upon the porosity of the deposit. Less porous deposits are secured at 95°F. than at higher temperatures, and the use of a high sulfate ratio is likewise beneficial. Again, however, the principal factor influencing protective value is the thickness of the deposit."

The present author started nickel and chromium plating of food contact parts of canning machinery in 1936, after reading the excellent book "Principles of Electroplating and Electroforming" by William Blum and George B. Hogaboom, both of the U. S. Bureau of Standards. This book is published by McGraw-Hill Book Co., New York. The plating procedures and solutions as set forth in this book were used, and still are being used with efficient results. This book was published in 1930, and it is to be recommended for the beginner, who should also, however, make use of newer published data.

Proceedings of the annual conventions of the American Electro-Platers Society are available, and contain many practical and readable solutions to electroplating problems, as well as many other scientific approaches to problems.

The footnotes to chapters in Uhlig's "Corrosion Handbook" are especially valuable and should be followed up by the beginner. They give references to literature on the things the beginner needs to know, such as "a good resume of nickel plating practice . . . in convenient form," and reference to such items as where "Tests for metal coatings" may be found.

To sum up in a sentence, the selection and proper use of stainless steels for food handling equipment and the use of chromium plating for the protection of both food and equipment are neither complicated nor difficult, and are well within the province of a capable canner himself to handle.

TOMATO JUICE SPOILAGE STUDIES IN 1948

By C. W. Bohrer and J. M. Reed, Washington Research Laboratory, National Canners Association

In 1947, several canners in the Eastern area encountered flat sour spoilage in their tomato juice packs. This spoilage was caused by a heat resistant, aciduric organism known to the industry as *Bacillus thermoacidurans*. Spoilage by this organism is not new and sporadic outbreaks have occurred ever since tomato juice was first packed, even though processes considered practical were employed.

The spoilage experience of the Research Laboratory of the National Canners Association with this organism during the past 15 years indicates that, although the organism is brought in on the raw product, spoilage is the result of a build-up of contamination with this organism in the canning factory itself. There may be other causes, but none to our knowledge has been specifically identified.

At the Canning Problems Conference, held during the 1948 Canners Convention in Atlantic City, the N.C.A. reported on spoilage control procedures for tomato juice. These procedures appeared in the Technical Supplement to Issue No. 1170 of the INFORMATION LETTER and represented the practical application of our knowledge at that time.

Since then, we have continued and intensified our investigations into the problem of tomato juice spoilage. This paper is essentially a report of our principal findings during 1948.

In order to investigate further sources of contamination and the efficiency of the control procedures reported previously, bacteriological surveys of a number of tomato juice canning factories were made during the 1948 pack in the Tri-States and neighboring areas.

Just prior to the pack, the three N.C.A. field laboratories were strategically located in Pennsylvania, New Jersey, and Delaware for purposes of convenient contact with plants in the surrounding areas. From the start of the tomato juice pack until well past its peak, the personnel from these three field laboratories sampled some 15 tomato juice canning factories almost every other day, and over 2,000 samples were collected and examined. The samplings were made at the start of the day's operation, and additional samples were taken at intervals throughout an entire day's pack as frequently as possible. The samples taken represented the juice at selected points in its preparation from the raw state to the final processed product. The number of sampling points was varied in each factory, depending upon the arrangement of the lines and the prevailing bacteriological condition. At each plant, however, the minimum number of samples included chopped tomatoes, juice after extraction, juice entering the filler bowl, and juice from the filled line can. The total number of bacteria, especially the spoilage types, was determined on each sample after a heat treatment of 5 minutes at 190° F. The bacteriological techniques employed were those described in the laboratory method for appraising bacteriological conditions of tomato juice lines as presented in our paper of last year.

Incubation of Processed Cans

To supplement the bacteriological tests, a case of processed cans from each line in operation was collected at the start of each day's pack and again after two hours of packing. These cans were set aside in the warehouses of the respective plants and observed for spoilage after suitable periods of incubation. The canners in whose plants the studies were being made were kept advised of the prevailing situation in respect to possible spoilage.

Spoilage hazards were uncovered, at one time or another, in over half of the plants under survey and spoilage was found in some degree in the control samples under incubation from three factories. One of the factories was using a pre-sterilization procedure. The occurrence of the spoilage was not unexpected, since filler contamination was found in all three plants. The samples were from a commercially processed lot and were those taken early in the day's run at which time contamination would be expected to be the highest encountered during the day. There was no indication of the likelihood of extensive spoilage in any case.

The 1948 surveys indicated that fillers headed the list as a source of contamination. In 8 of the 15 factories under study, varying degrees of filler contamination with *B. thermoacidurans* were encountered and, as mentioned previously, this type of contamination was responsible for the spoilage which occurred. The contamination could usually be eliminated by the simple expedient of flushing the fillers with water for about 20 minutes prior to the start of operations. During this flushing, it was imperative that the filler machinery be kept in motion and cans with perforated bottoms be run through the unit to clear the filler heads. Juice and water mixtures were noted a number of times in the pockets of the filler heads, even though on the surface the filler appeared to have been well cleaned. In one or two instances, the contamination was so persistent that it was necessary to dismantle the filler during cleaning in order to eliminate the contamination. Filler contamination is especially hazardous since no further dilution of the contamination can occur and the subsequent procedure, whether consisting of a short hold or a water process, may be inadequate to destroy it.

Extractors as Contamination Source

Extractors appeared to run fillers a close second as a contamination source. There were 6 of the 15 plants under survey which showed occasional contamination in the extractors. Next in frequency as contamination sources were pre-heaters, pumps, and pipe lines, which were found to harbor spoilage bacteria in three of the 15 plants tested. The best bacteriological control in the last four items of equipment was noted in the factories where they were dismantled and cleaned daily, followed by a thorough flushing with water prior to the start of operations. In one plant, a contamination build-up occurred in an extractor where the clean-up crew failed to clean the hopper because of a tight-fitting cover. This condition was observed on two separate occasions and in both instances bacteriological findings substantiated the build-up of thermoacidiuric organisms. When the cover of the hopper of this extractor was adjusted for more easy removal, no further bacterial contamination was detected.

In another factory, juice from the extractors was pumped to holding tanks through a long pipe line and the flow was controlled by gate valves. At the start of the day's operations the extracted juice was free of spoilage bacteria, but high counts of thermoacidiuric organisms were found in the juice as it entered the holding tanks. As the day's pack progressed, the counts at the holding tanks gradually diminished and after about two hours of operation the spoilage types completely disappeared. This indicated an overnight development of the spoilage organisms in the piping system between extractors and holding tanks. The finding was unexpected, since hot caustic solution was pumped through the line after the clean-up at the end of each day's pack. Preliminary laboratory studies have shown that a 2 per cent caustic solution at 180° F. is effective in destroying thermoacidurans spores in less than one minute.

It was found by subsequent bacteriological tests that the build-up occurred in a valve and a portion of the pipe line which was not completely flushed with caustic solution because of insufficient pump pressure. The contamination was eliminated when the valve on the line at the holding tank was partially closed to create a back pressure during pumping and the valve head loosened to allow the caustic solution to escape around the valve bonnet.

Other Sources of Trouble

Under the heading of miscellaneous sources, the canvas flaps on the entrance end of a washer just before the chopper were found to be heavily contaminated in one factory. In another instance, a length of brewery hose inserted in a juice line to absorb vibration served as a focus of contamination.

Up to the present, the contamination sources described were the result of a build-up of the spoilage organisms during overnight shut-down periods. The development of spoilage bacteria during actual operation was observed in three factories. In two of the factories, it was due to the use of a recirculation system used in one for juice and in the other for chopped tomatoes. In the third factory, the development of the spoilage bacteria occurred in a dead-end which was created by a manner of operating the fillers. In this particular factory, juice was fed by gravity through a common supply line to five fillers in sequence. As it happened, only Fillers 1 and 3 were placed in operation. This manner of operating permitted juice to collect in the main supply pipe between Fillers 3 and 5. Within two hours after the start of operations, an increase in the spoilage count was noted in the juice from Filler 3. This contamination continued to increase until the line was flushed out at the noon shut-down. During the afternoon's operation, the condition repeated itself. This situation was remedied as soon as it became apparent by flushing the closed line hourly and will be remedied permanently by inserting a cut-off valve. It is of interest to note in the recirculation and dead-end pipe examples, the speed with which the spoilage types developed in juice which was trapped or held stagnant for any length of time.

The theory has been advanced by some that raw product contamination plays an important role in flat sour spoilage of tomato juice. Throughout

the entire survey period, samples of the raw product were collected at all plants at the start of the day's operation and at a number of plants throughout the entire day's operation. At no time were any great numbers of spoilage organisms found entering the plant on the chopped tomatoes. Our findings indicated, for the most part, the complete absence of organisms of the spoilage type in the chopped tomato samples. On occasion, when the spoilage types were encountered, their numbers were usually of the order of one per 3 ml. of juice from the chopped tomatoes. In only three instances were counts as high as 10 per ml. of juice from the chopped tomatoes found, and this may have been due to a build-up in the chopper itself. There was no correlation between any counts of thermoacidurans organisms on the chopped tomatoes and the spoilage which was encountered in the processed cans of juice.

Raw Tomato Experiments

To supplement the survey data on chopped tomatoes, a series of experiments was conducted on raw tomatoes. The experiments were designed to test the effect of holding on the germination and spore formation of *B. thermoacidurans*. A brief outline of the experiments and the results is as follows:

1. Spore suspensions of *B. thermoacidurans* with and without the addition of soil were inoculated into breaks made in the surface of clean, raw, whole tomatoes.

The inoculated tomatoes with controls were placed under incubation at 37° C. in sterile containers. At selected intervals, determinations of the number of spores and vegetative cells present in the tomato samples were made.

The results showed that the spores germinated and the vegetative cells increased in numbers, which might be expected, but even though the inoculated tomatoes were held until they rotted, no increase over the number of spores added originally was noted.

2. At intervals during the 1948 tomato juice pack, baskets of tomatoes of at least two varieties as received at factories in southern Pennsylvania, New Jersey, and Delaware were set aside and held under prevailing weather conditions. Unwashed and partially washed samples of these tomatoes were checked for numbers of spores of the *B. thermoacidurans* type organisms, during a holding period as long as 16 days, depending on the condition of the raw stock. Some variations in spore counts were noted, but these were minor and appeared to be associated with the amount of soil on the samples. There was no tendency toward any well defined increase in spore counts with holding time.

3. As a final experiment, a number of baskets of tomatoes as received at two factories were set aside, and at intervals an entire basket of tomatoes was used to put up an experimental pack of juice. The tomatoes were given only a minimum of washing, heated to 160° F. and extracted in a laboratory model extractor. The juice was heated to about 200° F. and the cans were hand filled and air cooled or given a 10 to 15 minute process at 212° F., followed by water cooling. Thermoacidurans spore and mold counts were made on each batch of juice. No significant increase in thermoacidurans counts was observed in the juice even after 8 days of holding the raw tomatoes. No typical flat sour spoilage appeared in any of the packs after a suitable incubation period. Some spoilage developed in the pack of juice put up on the final day (8th day) of the experiment at one of the factories. Little significance could be attached to this spoilage, since the original pH of the juice was 5.1 and the mold count was nearly 100 per cent.

In order to determine the extent of soil contamination in the fields where the tomatoes used in the holding experiments were grown, soil samples were collected from those particular fields. Additional soil samples were collected from various tomato fields in the Tri-States and southern Pennsylvania areas. Suspensions of the soils were heated to 200° F. and the total number of spores determined on N.C.A. acid agar. The counts ranged from 30 to about 20,000 spores per gram of soil. There was nothing characteristic about the distribution of the spores. High and low counts were obtained in all areas.

Although relatively high spore counts were obtained on soak tank water, when tomatoes with much adhering soil were being received, the spore counts on the chopped tomatoes on these occasions never exceeded one per ml.

Other Spoilage Studies

Other studies conducted consisted of laboratory investigations into the characteristics and behavior of the spoilage types which were isolated during the survey and previously. They were made with respect chiefly to: (1) growth and temperature relationship, (2) heat resistance, and (3) sporulation. The more important findings to date are presented in summary form:

1. *Growth and temperature relationship:* Spores of the thermoacidurans type organism, when inoculated into tomato soup, puree, spaghetti, and whole tomatoes, produced typical spoilage with lowering of the pH. No growth was observed in strained peaches and pears at pH 4.1. Spore crops grown at 55° C. showed, generally, a higher resistance than those produced at 37° C. However, it has been observed that spoilage is more extensive and rapid at 37° C. than at 55° C. These findings would suggest that spore crops of the organism produced on laboratory media for heat resistance studies should be prepared at the 55° C. temperature and that more reliable results are obtained when commercially processed cans of juice are incubated at temperatures around 37° C. It also implies that spores of higher resistance might be produced in tomato juice held in the thermophilic range for any length of time during packing.

2. *Heat resistance:* Heat resistance studies on seven different isolations of thermoaciduric type organisms were conducted at temperatures ranging from 212 ° F. to 250° F. The results of these studies were used to prepare a chart of suggested holding times at various temperatures for the guidance of packers using pre-sterilization methods. Representative holding times suggested are 9 seconds at 260° F., 20 seconds at 255° F., or 42 seconds at 250° F. Since growth was obtained in tomato soup and in spaghetti, heat resistance tests were also made in these products. The results showed that the flat sour aciduric types are of potential spoilage significance if a heavy contamination should occur. Studies on pH adjustment in soup and tomato juice indicate no appreciable effect on the thermal death time of the aciduric flat sour organisms during variations of pH from 4.2 to 4.5. From pH 4.0 to 4.2, the results have been erratic with absence of growth as the usual finding in both tomato soup and juice.

3. *Sporulation:* An attempt was made to bring about spore formation in tomato juice. We were unable to induce such spore formation under a variety of conditions designed to simulate those which might be encountered in the factory. These conditions included cyclic heating, drying, and dilution with water both with and without the addition of phosphate. The factors which influence the apparently rapid spore formation in the equipment during shut-down, or, under certain conditions, in the juice itself during actual packing operations are still unknown. More work on this phase of the study is planned, since a better understanding of these factors would be helpful in spoilage control.

In interpreting the findings of our bacteriological surveys this past season, we are aware that the conditions which prevailed with respect to volume of pack and weather were not the same as those during the 1947 pack. However, the information obtained this year and in the past by ourselves and others supports our convictions that flat sour spoilage in tomato juice results from the development of the spoilage organism in the canning

equipment itself. The bacteriological method demonstrated the location and extent of the spoilage hazards within the canning plant and the can incubation test revealed the efficiency of the commercial processes used.

The spoilage hazards found this year are not new. Fillers, extractors, pumps, pipe lines, valves, etc., have been encountered and reported before as contamination sources. The N.C.A. and other investigators have demonstrated in the past that proper installation of equipment and intensified clean-up efforts are effective in controlling or eliminating the hazards. Our studies during 1948 have reaffirmed this.

It is true that the spoilage types are present in the soil in large numbers, but direct soil or raw product contamination does not appear to be responsible for flat sour spoilage. Our raw product experiments and survey tests substantiate this assertion.

Since the bacteriological condition of tomato juice canning equipment is the major factor in spoilage, the maintenance of a satisfactory condition during packing is important, regardless of the type of processing used.

The rigid control necessary to prevent contamination build-up has been observed during the field studies. The slightest infraction was reflected in the bacteriological findings.

It is encouraging to note that in a number of plants where exceptional emphasis was placed on equipment maintenance, no spoilage hazards were encountered. Also, where spoilage hazards developed, they could be controlled by direction of cleaning to the contamination source.

It is not our intention to write a closing chapter to tomato juice studies at this time. Additional studies of the spoilage organisms and bacteriological surveys are contemplated for the coming year. Any new development will be reported. Meanwhile, the spoilage control procedures suggested last year appear to be still valid.

PRESTERILIZATION OF TOMATO JUICE— APPLICATION OF IN-PLANT BACTERIOLOGICAL CONTROL

By I. J. Hutchings,
H. J. Heinz Co.

Foods are eaten to satisfy the appetite and for their nutritive value. The time has passed when the canner limits his responsibility to the actual canning operation. It is common knowledge that his responsibility begins with the selection of seed to produce the variety which most closely meets the standards set for nutritious foods. He must now reach out beyond the walls of his establishment to control varieties, soil fertility, maturity and harvest time, time and temperature of storage subsequent to harvesting, as well as controlling time in preparation, time and temperature of the sterilizing process, and proper cooling of sterilized product in the factory itself. The nutritional chemists have shown that vitamin conservation in our foods is most dependent upon the factors of oxidation and time and temperature of sterilization. Using thiamine destruction as an index for processing foods for greatest nutrient value, it was found that high temperatures for short periods of time resulted in less thiamine destruction than when the same sterilizing value was obtained by use of lower temperatures.

It is admitted that our old methods of processing, whereby more than sufficient cooks were given, produced a product which was adequately sterilized and therefore would keep indefinitely although it might have been unappetizing from the consumer's standpoint and also very low in nutritive value.

Great strides have been made in processing procedures and we now have processes for each group of products based on experimental data. These processes are primarily based on thermal death time and heat penetration data; however, in some cases inoculated pack studies are included. In time we will know the precise process required for all foods based on nutritional, bacteriological, and physical data.

Advances in this field have brought into existence processes employing presterilization of certain foods. Employment of such a process produces a straight line operation resulting in many advantages over the batch operation of retorting, thus improving product quality and operational procedures.

Tomato juice was not packed by our firm during the war years due to the tin shortage. Before resuming production of this item, the newer method of presterilizing juice was thoroughly investigated and considered sound. In a survey of the equipment available for presterilization, it was felt that none of them was complete enough for our purposes, therefore our engineers designed equipment which was constructed to our specifications. This equipment was designed and instrumented to prevent any juice which had not received the desired F_o value from reaching the filling equipment. Tomato juice with an intermediate pH of 4.0 to 4.2 can be presterilized and filled hot into the container, sealed, held, and cooled without danger of spoilage providing adequate precautions are taken to assure that satisfactory bacteriological conditions exist. To properly determine this, a bacteriological control program is needed and the establishment of such a program in the Tracy and Berkeley, Calif., factories of the H. J. Heinz Company will be discussed.

It must first be determined how extensive a control program is to be undertaken before a decision can be made as to the size of the room for housing the laboratory and the equipment.

In our program it was decided to sample at four locations: (1) extractor run-off tank; (2) storage tank; (3) filler bowl; (4) seamed can at end of hold period. Equipment was procured of sufficient size to enable sampling of the four stations at two-hour intervals over a two-shift per day operation.

The procedure outlined by C. W. Bohrer, N.C.A. INFORMATION LETTER No. 1170, January 28, 1948, was used as the basis for calculating the equipment and operating supplies required. The amount of space needed for each set of samples and the time it would occupy that space, according to incubation time, was determined.

The following equipment and supplies are needed:

Laboratory Equipment

1 Sink
1 Incubator with 24 sq. ft. of shelf area for 37.5° C. incubation.
1 Incubator with 12 sq. ft. of shelf area for 55° C. incubation.
1 Autoclave, horizontal with full opening door diameter 17½ x 26" deep.
1 Hot air sterilizing oven, I.D. 29" wide x 24" high x 19" deep.
1 Torsion balance.
1 Set of weights.
1 Refrigerator (ice or electric).

In our program the sink and refrigerator were not required. We used existing wash-up facilities and refrigeration of our existing quality control laboratories.

To house this equipment and allow for adequate work space would require an area 12 x 15 feet with electric, gas, water, steam and sewer service.

Figure I shows a suggested plan for equipment location in the selected area, which provides a smooth operating laboratory with a minimum of confusion. This is essential in a small area during tomato season. The plan provides a flow of material from glassware cleaning and media preparation, to media and glassware sterilization, to media and glassware utilization in sample plating, to incubation, to counting, to wash-up.

Operating Supplies (Including Percentage for Breakage)

1000 100 x 15 mm. Petri dishes.
1200 18 x 150 mm. Culture tubes.
400 25 x 200 mm. Culture tubes.
6 Test tube supports for 25 mm. tubes.
25 Test tube supports for 18 mm. tubes.
6 Funnels 4".
5 Two liter Erlenmeyer flasks.
6 One liter Erlenmeyer flasks.
50 300 ml. Erlenmeyer flasks.
125 1 ml. Bacteriological pipettes.
1 Bunsen burner.

Media Requirements for a 60-Day Program

20 lbs. Thermoacidurans Agar.
10 lbs. Dextros Tryptone Agar.
3 lbs. Bacto Tryptone.
2.5 lbs. Dextrose.
½ lb. Yeast Extract.
2 lbs. Bacto Agar.
½ lb. Dipotassium Phosphate.

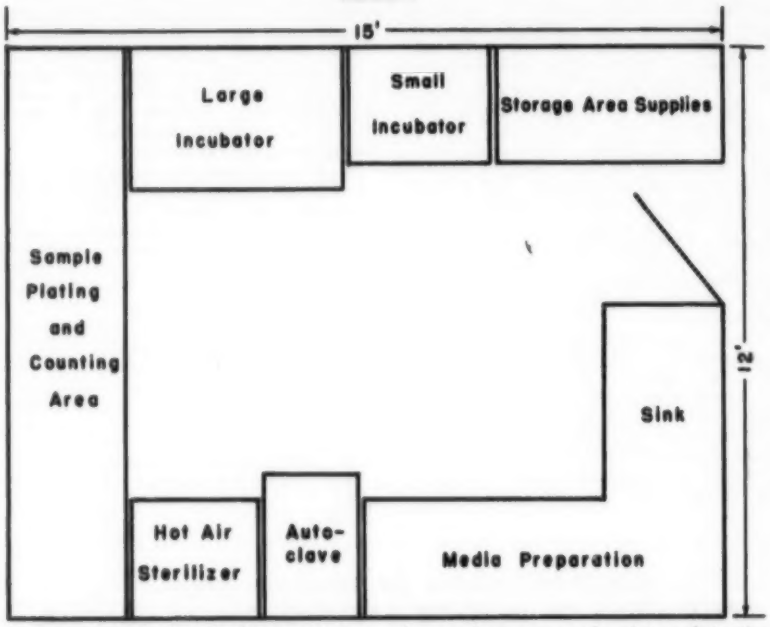
At our suggestion, Difco Laboratories agreed to make dehydrated thermoacidurans agar available for this work which simplified the preparation of media.

The personnel make-up of the existing laboratories at the plants in which the program is to be inaugurated will determine, to some extent, the personnel available for this work. If possible, a permanent member of the quality control staff should be trained in the bacteriological control program. To operate the control program as outlined would require:

On the Day Shift: One person, preferably with some bacteriological training, to do the sample plating and read the results. This person can, if adept, do all of the two-shift samples during an 8-hour day. One person to prepare media, both formulation and melting and exhausting for use and to collect samples. One person to wash glassware.

On the Night Shift: One person, part time, to collect samples bi-hourly and properly cool and store for the following day.

FIGURE 1



In our particular duplicate set-ups, bacteriologically trained people were not available from existing permanent employees; therefore, we had to train in one instance a chemist and in the other a technician to do this work. It required about one week's time to train the chemist in bacteriological tech-

FIGURE 2

BACTERIOLOGICAL CONTROL (SURVEY)

COUNT-PER ML.

	EXTRACTOR									STORAGE TANK									FILLER BOWL									CLOSING MACHINE								
	1			2						1			2						1			2						1			2					
MEDIUM		P.P.		P.P.		B.C.P.		T.B.			P.P.		P.P.		B.C.P.		T.B.			P.P.		P.P.		B.C.P.		T.B.			P.P.		P.P.		B.C.P.		T.B.	
TEMP. INCUBATION	98	131		98		98		131	98	98	131		98		98		131	98	98	131		98		98		131	98	98	131		98		98		131	98
TIME INCUBATION	96	24	48	24	48	24	48	96	96	96	24	48	24	48	24	48	96	96	96	24	48	24	48	24	48	96	96	96	24	48	24	48	24	48	96	96
CODE																																				

P.P. - PROTEOSE PEPTONE
B.C.P. - BROM CRESOL PURPLE
T.B. - TRYPTONE BROTH

CAN INCUBATION

CODE	9 DAYS														14 DAYS														REMARKS

TABLE I

Bacteria Count per Milliliter of Tomato Juice at Various Locations in Presterilized Tomato Juice Line

Media Inc. Temp.	Extractor Tank P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Storage Tank P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Filler Bowl P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Closing Machine P.P. 131	P.P. 98	B.C.P. 98	T.B. 98
7	0	0	1	+	0	0	0	+	0	0	0	−	0	0	0	−
9	0	0	24	+	0	0	10	+	0	0	0	−	0	0	0	−
7	0	11	C	+	0	10	C	+	0	0	0	−	0	0	0	−
9	0	0	5	+	0	0	.3	+	0	0	0	−	0	0	0	−
7	0	27	200	+	0	0	2	−	0	0	0	−	0	0	0	−
9	0	1.3	1	+	0	0	3	+	0	0	0	−	0	0	0	−
7	0	4	C	+	0	0	2	+	0	0	0	−	0	0	0	−
9	0	1.6	.6	+	0	0	1	+	0	0	0	−	0	0	0	−
7	0	200	1	+	0	16	C	+	0	0	0	−	0	0	0	−
9	0	2.6	6	+	0	4	17	+	0	0	0	−	0	0	0	−
7	.3	1.6	C	+	0	0	0	+	0	0	0	−	0	0	0	−
9	.3	0	14	+	1.6	1.6	7	+	0	0	0	−	0	0	0	−
7	6	0	0	+	32	0	0	+	0	0	0	−	0	0	0	−
9	9	0	C	+	46	.6	40	+	0	0	0	−	0	0	0	−

TABLE I-A

Bacteria Count per Milliliter of Tomato Juice at Various Locations in Presterilized Tomato Juice Line

Media Inc. Temp.	Extractor Tank P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Storage Tank P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Filler Bowl P.P. 131	P.P. 98	B.C.P. 98	T.B. 98	Closing Machine P.P. 131	P.P. 98	B.C.P. 98	T.B. 98
7	80	0	2	+	80	0	8	+	0	0	0	−	0	0	0	−
9	TNTC	.6	2.3	+	TNTC	.3	.6	+	0	0	0	−	0	0	0	−
7	34	TNTC	C	+	80	1.6	2.3	+	0	0	0	−	0	0	.6	−
9	TNTC	22	C	+	TNTC	23	C	+	0	0	0	−	0	0	0	−
7	177	127	C	+	195	14	C	+	0	0	0	−	0	0	0	−
9	28	2.6	63	+	9	1.3	1.6	+	0	0	0	−	0	0	0	−
7	113	6	C	+	17	.3	C	+	0	1	0	−	0	0	1	−
9	5	58	C	+	25	53	C	+	0	.3	0	−	0	0	.3	−
7	200	16	C	+	300	7	C	+	0	0	0	−	0	0	0	−
9	76	.3	.3	+	27	1.3	.3	+	0	0	0	−	0	0	0	−
7	256	2.6	5	+	68	.3	5	+	0	0	0	−	0	0	0	−
9	87	38	101	+	72	2	70	+	0	0	0	−	0	0	0	−

niques and two weeks before the individual was considered reliable for counting and recording data. The technician needed a longer training period and this particular individual never did develop satisfactorily in all respects. Additional assistance from one of the analysts, a temporary worker with some bacteriological training was required, particularly for counting. The sample breakdown into plates is strictly a mechanical operation and one that can be mastered by any adept person. Our greatest difficulty was experienced in plates showing low to zero counts. Invariably it was found that pieces of the tomato had been mistaken for bacterial colonies, particularly on the thermoacidurans agar. One with experience in this field realizes that this is not unusual. It was found necessary to have the individual check all questionable plates using a binocular microscope available in most food laboratories; therefore, it is not listed here as essential equipment. For recording of data, we developed the control sheet shown in Figure II.

When the control program was initiated, all four locations chosen were sampled at two-hour intervals; however, this resulted in too much work for the personnel available. Therefore, the procedure was amended to the sampling of all stations at the beginning of the first shift making certain that the first juice through the system was collected. Two hours later the four stations were again sampled. These samplings occurred at 7 a.m. and 9 a.m.

For the remainder of the day, the filler bowl and seamed can stations were sampled at two-hour intervals. When more than one line was in operation, samples were taken from alternate lines. Sampling procedure should conform to results obtained. If one line should show significant filler bowl and seamed can count then that particular line or lines should be sampled at more frequent intervals. We did not experience any bacterial growth in our filler bowl and seamed can stations at any time during the season as shown in Tables I and I-A.

In general, these results bear out the observation of Dr. E. J. Cameron and co-workers that line counts are highest during the first hour's operation due to overnight build-up, and are flushed out by continuous operation. The observation must also be recorded that given certain equipment and operating at certain temperatures, bacterial build-up can occur during the operational cycle. It must also be observed that proper clean-up of equipment can prevent overnight build-up.

Gas-producing bacteria were found in the extractor and storage tank locations incubated at 37.5°C. with persistent regularity. No gas producing bacteria were found in these stations at 55°C. incubating temperature. No gas producing bacteria were found at either incubating temperature in the filler bowl and seamed can stations. *B. thermoacidurans* have not been positively identified, but bacteria of similar morphological and cultural characteristics were found.

As stated in the introduction, high-temperature, short-time sterilization is designed to take care of a predetermined bacterial load; therefore, to be successful, every effort must be made to keep this bacterial load below that maximum point which determines the process. This can be accomplished through proper plant sanitation and a rigorous clean-up procedure. Our operation cycle was broken into two eight-hour shifts with a two-hour clean-up between shifts.

After the first eight-hour operation, the equipment was flushed with cold water to remove residual juice. This was followed with 300 gallons of a hot caustic solution which was circulated through the sterilizing unit for 30 minutes with ample flushing of diversion lines, followed by a phosphoric acid neutralizing flush, followed by cold water. The sterilizing unit was then sterilized with a juice load during which time all equipment and piping from sterilizer to filler bowl was sterilized with steam. Filler bowl parts were dismantled and thoroughly cleaned, then rinsed in a sanitizing solution before reassembly. Seamer rolls and chucks were cleaned. The line was ready then for resumption of operations. After the second eight-hour shift, in addition to the above, a sanitizing solution was also used. The deaerator, storage tank were scrubbed; sterilizing unit dismantled and heating, holding, and cooling surfaces brushed. Fillers were dismantled, cleaned, and sanitized and seaming rolls and chucks cleaned.

The establishing of a bacteriological control laboratory for presterilized tomato juice not only provided continuous 24-hour evaluation of the product, assuring management that the operation was a reliable one, but also afforded the opportunity of studying from the bacteriological point of view the complete operation from raw product through every step in preparation and processing. This proved a valuable source of information for future planning.

Based on one year's experience, we are satisfied that the presterilization method of packing tomato juice is sound providing it is based on a bacteriological control program. We also

found the laboratory procedure recommended by the N.C.A. to be a workable one and adequate for evaluating the process. This program may not be satisfactory for the processor who does not wish to invest in the technology which is felt should accompany this program.

With the newer techniques of sterilization being developed and applied, management will find bacteriological control an essential for proper functioning of such lines and there is no better opportunity for the beginning of this work than that of a presterilizing operation on tomato juice.

CANNING PLANT SANITATION—DO'S AND DON'TS

By N. H. Sanborn,
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National Canners Association

The handling, storage and manufacture of any food product for human consumption demand the proper appreciation and application of the principles of sanitation. A brief analysis of this statement with respect to canning plant practices will demonstrate its validity.

Raw products are handled from the point of harvest to the plant and through the various canning operations. Handling must be done in a sanitary manner. Raw products may be stored for a short period in the factory yard or receiving dock, or for extended periods in the case of such products as beets or apples. Sugar, salt and other canning ingredients may be stored for as long as from one season to the next. Storage must be under sanitary conditions. The actual steps in canning are a manufacturing process and again sanitary practices must be observed. Appreciation of sanitation by top management and by every employee is essential. Application of the principles of sanitation is the corner stone of a program of good plant sanitation.

The National Canners Association, through its Washington and San Francisco laboratories, has been conducting an intensive program designed to promote better canning plant sanitation. Our first endeavor was concentrated on the "appreciation" phase. Response from industry has made possible the concentration of our efforts on the "application" phase.

Factors in Sanitation

1. *Plant Construction:* Many details in plant construction play a part in sanitation. The materials of construction used should lend themselves to easy cleaning. Floors should be watertight and properly sloped to floor drains capable of handling the load imposed upon them. The building itself should have ample floor space to permit the installation of equipment in an uncrowded condition to permit ready access to equipment to facilitate cleaning. Advantage should be taken of constructional features to secure the maximum use of sunlight.

2. *Equipment:* Equipment should be fabricated not only for its functional use, but also with due regard to its cleanability and protection from sources of contamination. Wood as a material of construction for equipment handling food is, in nearly every situation, passé. Smooth, hard, nonporous materials are available, notably stainless steel. Pipe lines and fittings should be of the sanitary type common to the dairy industry. The elimination of sharp corners in tanks, flumes and other equipment greatly facilitates cleaning. Welded tubular construction is much to be preferred to angle iron construction. All surfaces of equipment should be directly accessible for cleaning or proper provision provided for recirculation of cleaning solutions. Canners are making great strides in these directions.

3. *Lighting:* Adequate illumination is essential for the proper functional operations in the mechanics of canning. From the standpoint of sanitation good lighting is an essential adjunct to cleaning. Without supplementary lighting the clean-up crew cannot see to do their job in the manner desired.

4. *Ventilation:* Ventilation is required for the removal of excessive quantities of steam escaping from certain operations to prevent the growth of mildew, to avoid condensation and drippage into food or onto equipment handling food and for the comfort and well-being of employees. Natural draft hoods and ducts may suffice but forced draft ventilation is superior. Conditions are not acute in most canning plants. The greatest need for ventilation arises during operations in the cold winter months.

5. *Paints:* The proper type of paint and the liberal use of paints are required for the protection of equipment and structures, avoidance of contamination and as an aid to illumination. The choice of a particular paint will depend upon the nature of the surface to be painted and whether the paint may come in contact with food.

6. *Water Supply:* An abundant supply of water over and above that required by canning procedures is needed to maintain plant and equipment in sanitary condition. Sources of possible contamination and the quality of the water itself should be checked periodically. Potable water must be used for drinking purposes and water of a similar quality should be used when it comes in contact with food and for cleaning equipment handling food. Water re-use is permissible only when the hazards are understood and suitable control measures are adopted.

7. *Cleaning:* The proper organization of the clean-up crew supplied with the necessary cleaning aids and given sufficient time to do a job is essential to sanitation. The organization of the clean-up crew begins with the selection of individuals who know the peculiarities of the construction of equipment or who can be taught this. The crew should be instructed to look for those hard-to-get-at places, what constitutes cleanliness and how to clean. They should be instilled with the feeling that cleaning is not just a job to be hurried through but a step in canning as vital to the production of a quality product and as important as any single canning operation. The physical aids involved are water, heat, detergents, sanitizing agents, brushes and high-pressure cleaning equipment.

8. *Rodent Control:* Rodent control is a "must" in any food establishment. If for no other reason, the aesthetics of sanitation demand it. In most canning plants rodent control is not difficult, but constant vigilance is necessary. To the extent possible methods of building them out should be practiced. Elimination of harborages, removal of sources of food and a systematic program of rodent elimination complete a well rounded-out program of rodent control. As one authority stated, "Rats are not as smart as humans are lazy".

9. *Insect Control:* The control of insects proceeds along lines similar to that of rodent control. A clean plant inside and on adjacent outside areas is required to avoid attracting and breeding insects. Screens and the use of fly fans aid in denying entrance by flying insects. The judicious use of insecticides is required.

10. *Product Contamination:* Many types of product contamination must be recognized and steps taken to avoid contamination. In the last analysis most of the program of canning plant sanitation is directed toward the prevention of contamination of one sort or another—bacterial, old deposits of food particles, rodents, insects, dust, dirt and foreign material regardless of its source. Of the various factors in sanitation listed each one has some aspect dealing with the prevention of product contamination. In addition mention might be made of such simple precautions as equipping cross-walks over open equipment with tight floors, risers and toe-boards, the installation of collars or curbing around floor openings or as protection for equipment located beneath floor level, protection of electric light bulbs and fixtures to prevent contamination

from glass, and the wearing of a suitable hair covering by employees handling food.

11. *Waste Disposal:* The sanitarian is concerned with the prompt and complete removal of waste materials in and around the plant before they become a nuisance. The sanitary engineer is concerned with waste disposal and treatment to avoid the creation of a public annoyance particularly with respect to pollution of a receiving body of water.

12. *Employee Health and Comfort Facilities:* These are some of the more intangible aspects of sanitation and yet they contribute in a large measure to the success of any sanitation program. From the standpoint of production, establishment of conditions which increase the morale of employees certainly leads to dividends in the form of increased employee productivity. In-plant feeding, washing and toilet facilities, drinking fountains, first-aid, recreation rooms, locker facilities, and where migrant workers are involved, housing facilities are factors involved.

The canning industry, and indeed, the entire food industry is experiencing a growing awareness of the value of better plant sanitation. Some of these advantages are:

1. A better product.
2. A clean plant.
3. Compliance with sanitation regulations.
4. More efficient operation.
5. Greater productivity from employees.
6. Fewer accidents.
7. Advertising value of a clean wholesome product packed in a clean plant.

The only "don't" that will be mentioned is, don't fail to have a complete sanitation program.

THE PLACE OF CANNERY SANITARIANS UNDER TOP MANAGEMENT

By Vincent W. Barnes,
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The shock troops of the sanitation campaign of the canning industry were a group of 25 men sent to the University of California, at Berkeley, in the fall and winter of 1945. These men were given an intensive eight week course in basic sanitation of food preparation in all its aspects. Their indoctrination and orientation were guided by leaders from the industry, from N.C.A. and other research laboratories, officials from Food and Drug agencies and Public Health offices. Their training was undertaken by professors of biological science, of engineering, of education, of sanitary science, and by men with practical experience in the fields of public health and of sanitary food production.

Even though the backgrounds and education of these men were varied, the quality of this training course was such that they went back to their respective positions with an understanding, a large store of knowledge of the sanitary sciences, and an enthusiasm for the job ahead. The results they achieved have been remarkably good.

As could be expected, the progress was somewhat slow the first year, but the record of their partial successes created an urgent demand for more courses to train more men in sanitation for more food processing plants. The California State Food and Drug inspectors noted the rapid progress in sanitation of plants where trained sanitarians were employed, and urged other canners to obtain some comparable training for one of their employees in order that they might keep pace. To meet this demand, the Western Branch of the National Canners Association organized and presented four training courses, each of two weeks duration, where 131 men were given intensive indoctrination and training in food industry sanitation. These groups comprised plant superintendents, production foremen, clean-up foremen, and promising youngsters not yet permanently located. Many had long years of practical experience, and others had very little.

While two weeks was admittedly a short time in which to digest the large amount of information and experience of food plant sanitation presented to them, these men, none-the-less, went back to their plants with confidence and a determination to see their own sanitation problems and to find the solution for them, if possible. Like the first group, their results have been varied, depending on the cooperation they received in attempting to improve sanitation in their plants.

At the end of about two years of the sanitation program in the western region, these trained sanitarians have shaken down into, roughly, three different categories in their relationship to the other members of their organizations.

First, the highly placed men who are advisers of or consultants with top management; second, the men who are responsible for plant sanitation but who have other duties such as quality control, research, safety, personnel relations, etc.; and third, the production men, plant superintendents, foremen, of preparation departments or of the clean-up crew or even seasonal employees.

The sanitarians of the first category, the consulting sanitarians, are, thus far, few in number and only the largest organizations employ them. However, because of the position in which they have been placed by top management, their recommendations are given the serious consideration of a specialist's advice. Their job is to set up and administer the sanitation programs for their organizations, to train assistants to carry out the details of all its phases; to prepare and direct the education program in sanitary practices for the supervisory personnel in the various plants or departments; and to inspect and supervise the progress of sanitation in their companies. They are asked to advise management on the sanitation problems in new building and equipment construction, and the maintenance and repair of old, the disposal of wastes, water supply, warehousing and storage of raw materials, temporary feeding and housing of employees, pest control and many other details of food plant operation. These men are close to the men who make the final decisions and are thus able to present *in full* the need and advantages of the course of action recommended. The consulting sanitarian has a tremendous job and thus far his success has been dependent upon management's willingness to accept his recommendations and to support his program.

The sanitarian in the second category, the part time sanitarian, might be called, for want of a better name, the sanitation director. He is responsible for the sanitation program in one or more food processing plants and in many cases his duties are nearly identical with those of the consulting sanitarian. His position in the organization is that of an inspector, an educator, an assistant to the plant manager, a sort of "top-kick" foreman. He is usually closer to the supervisory personnel in his plant than he is to top management because he is in constant association with them in performance of his other duties. The sanitation director outlines a sanitation program and attempts to carry it out during the time he is able to take from his other jobs. His success is dependent upon the support he receives from management and on his ability to obtain the cooperation of the supervisory personnel by education, tactful persuasion, appeal to competitive spirit, more or less gentle coercion, or just plain "throwing his weight around".

The sanitarians in the third category are really not sanitarians; instead, they might be called sanitation assistants. More correctly, they are production men applying sanitary principles to the production of high quality food products. Their contact

with top management is infrequent, brief, uneasy, and usually has less to do with sanitation than with increased production methods. In their daily schedule, sanitation must take something of a back seat. The sanitation program in any organization is dependent to a large degree upon these men to carry the principles of sanitary conduct and procedures to individual employees under their immediate direction. By example and education, they help train and obtain the co-operation of their fellow foremen and superintendents. Many of these men trained in the N.C.A. short courses have done splendid work in improving sanitation in their own plants or departments. Their success has been conditioned by the accessibility of their "big boss" and the constancy of his support, by the amount of time they are able to give to the sanitation program and by their ability to evaluate its importance in the production of quality foods.

Because of the wide divergence in background, training, and ability seen in the men who have been classified into these three categories, and because of the lack of uniformity in the results obtained by them, all managers are not in agreement as to just where the sanitarian fits into the organizational pattern of the food processing industry. It is hoped that this breakdown will show from which category the sanitarian needed in any organization should be drawn.

Standards for Sanitarians

The measure of success any sanitarian is able to achieve is determined by five major factors:

1. His native intelligence, his personality, his tact, his executive ability, and his enthusiasm for his job.

2. His background of education and practical experience.

3. His training in sanitary sciences as it relates particularly to his industry.

4. His position in the organization of his company.

5. This support which he receives from the top management.

The first three factors are furnished by the sanitarian and can be strengthened through study and application. The last two must, of course, be supplied by the management of his company. The sanitarian must be able to go directly to top management for discussion and approval of his plans, since the sanitation program in every food producing industry is important enough to merit the personal attention of management at top level. Management is held directly responsible for any breakdown in the sanitary quality of their product, and they cannot afford to allow failure of the program through lack of first hand information. Management should require frequent conferences with the sanitarian to discuss this progress, the results of periodic inspections, or special surveys, and should expect immediate information on unusual sanitation problems when they arise. In such a position, the sanitarian will usually develop a thoroughly effective, well coordinated and successful sanitation program.

The last and probably most important factor in the success of the sanitarian is the support which he receives from management, and to speak frankly, some food processing concerns are not yet convinced that sanitation is of sufficient importance to set up and support an effective program. Sanitarians unfortunate enough to have found themselves in this position have either quit or have dropped into some other department. To be successful, a sanitation program in any concern must originate from the ownership or management at the highest level. They must be convinced that sanitation is vitally important in the production of quality foods, and that it will in a large measure, pay for itself in the form of more efficient production, increased sales through better consumer acceptance, in the form of insurance against infraction of Food and Drug regulations, in the form of better employee efficiency and morale through better working conditions. Good sanitation must be company policy. If good sanitation as a company policy is put into effect, then a policy of insanitation can never be assumed. The sanitarian is the officer of the company who is expected to carry out the details of that policy. He must have adequate authority and constant support which will assure him the prestige necessary to obtain the full and unquestioning co-operation of plant personnel.

Sanitation in the food industry is not a fad or a current fashion. It is growing in importance. The consumer is becoming increasingly conscious of sanitation in everyday living. Regulatory agencies are aware that the public will support stricter enforcement of present regulations and give encouragement to them to formulate others on broader lines.

It becomes necessary, therefore, for every food producing company to make sure that sanitation in its plants lacks in no important factor. If the sanitarian is intelligent, capable, enthusiastic and well trained; if he is placed in a position which gives full scope for his abilities; if his program is adopted and sincerely approved as part of company policy, and is carried out as such, then that sanitation program will become a more and more valuable factor in the production of wholesome fine quality food products.

STUDIES OF LIGHTING FOR CANNERIES

By H. K. Wilder,
Western Branch Laboratory,
National Canners Association

This is a decade of revolution in lighting practices. Those of us who attended either the New York or the San Francisco World Fair of 1939-40 will recall our introduction there to the fluorescent lamp. This lamp, with two to three times the light output per watt of the incandescent lamp, made it possible to increase the quantity of illumination to levels previously considered economically prohibitive. Fluorescent lamps also introduced choices in color of light, without the sacrifice of quantity which previously had been unavoidable.

But, concurrently with the introduction of fluorescent lighting, new and improved types of incandescent lamps were being developed, and mercury-vapor lamps were being brought to a high stage of perfection.

Which lamp, then, should we use? Actually, each lamp has its place, and there are a multitude of considerations which govern the selection for a specific application.

Good illumination is of primary importance in canneries. It makes for better and more accurate workmanship, for increased production with decreased cost, for greater cleanliness, for greater safety, for less eyestrain and fatigue, and for improved morale among employees. A well-lighted plant is without doubt a more pleasant and better place to work.

Present lighting practices in canneries range all the way from the most modern concepts to the era of the bare bulb hanging on a lamp cord.

The wide range of current practices is not due so much to conscious desire on the part of management as to a need for more specific information during a period of rapid evolution. There need be little wonder that many canners remain "in the dark" as to the best course to follow in the improvement of cannery lighting. Even the lighting engineers have encountered difficult problems in trying to find the best solutions to cannery lighting problems. This was evidenced by the action taken by the Illuminating Engineering Society which, for several years, has had a special committee assigned to the specific task of studying the lighting requirements of canneries.

The lighting problems of several other industries have been studied, but I know of none which has encountered the range or complexity of problems

found in the canning industry. The products which are handled cover the entire visible spectral range as, for example, red tomatoes, oranges, yellow corn, green beans, blueberries, and Italian prunes, with dozens of products having intermediate colors. Some of the defects or differences in maturity which must be detected tax the eyesight of the worker, as for example dark spots on red beets, or maturity differences in yellow corn. And there is the ever-present problem of specular reflection from wet products, wet conveyor belts, or from shiny containers. Production is moving at an ever-increasing tempo, and speed of vision has become increasingly important.

Lighting Requirement Studies

For over 30 years the Illuminating Engineering Society has been studying the lighting requirements of various industries and has periodically revised its bulletin entitled "Recommended Practice of Industrial Lighting". But even the latest edition, published in 1942, carried for us only the single entry "Canning and Preserving—20 foot candles." This proved entirely inadequate for the guidance of lighting engineers encountering cannery problems and, in 1944, a special subcommittee was appointed to study the lighting requirements of canneries. The committee membership was made up of lighting engineers working in the great canning area radiating from the San Francisco Bay district. Cannery lighting surveys were conducted in that area, and were supplemented by surveys in canneries located in New York, Oregon, Washington, Utah, Colorado, and southern California.

It became evident from these surveys that the most general need was for a considerable increase in the amount of light supplied. But canners were experimenting with fluorescent lamps of several colors and, constantly, the question was raised, "What color of light should I use for this particular product?"

Each cannery survey revealed different problems, and the committee endeavored to classify them. Finally, it was decided to separate the problems into two categories, to be studied separately.

First, there was the study of the *general lighting* of the working areas in canneries. Second, there was the problem of providing *supplementary* lighting for the more difficult seeing tasks encountered in the sorting, preparation, inspection and canning of various products, and for inspection of containers, labels, and other accessory items.

The difference between *general lighting* and *supplementary lighting* is a simple one. When you walk into your living room and snap on the overhead lights you provide *general lighting*. When you turn on the floor lamp at your favorite chair to provide extra light to read the evening paper, that's *supplementary lighting*.

But the direct lighting and the supplementary lighting are interrelated, and proper relationships must be maintained if eye fatigue is to be kept to the minimum.

Continuing for the moment our living room analogy, you doubtless are familiar with the modern designs of floor or desk lamps which, in addition to providing good illumination upon your reading or other seeing task, throw a good proportion of their light to the ceiling and diffuse another portion about the room through the translucent shades. The purpose of such design is not to run up your electric bill, but to provide a proper balance between the amount of light on your immediate task and that reflected from the walls, ceiling, and furniture. Man, through the ages, lived out of doors, and the eye was best adapted for distant vision. Nature rests the eye muscles by causing us involuntarily to raise our eyes at frequent intervals from a close task and rest them upon some more distant object. But if the quantity of illumination reflected from the distant object is far different from that on the task at hand, another set of eye muscles goes into operation to control the amount of light reaching the retina. You can demonstrate this by having a cooperative friend permit you to observe the diameter of the pupils of his eyes in a dimly lighted room. Then direct a strong light—as from a flashlight—into his eyes and see how quickly the diameter of the pupil contracts. Adjustments of this sort take place when we direct our eyes from one object to another. Eye muscles tire, just as do those of our arms or legs. To reduce fatigue, it is important that the differences in illumination be kept to a minimum. Engineers tell us that the general illumination should never be less than one-tenth of the illumination on the critical task, and preferably should be not less than one-third.

In terms of cannery lighting, this means that if you are providing 100 foot-candles of light on a sorting belt you should have at least 10, and preferably 30 or 35 foot-candles of general illumination in the room.

Color of walls and equipment also becomes important, because more light will be reflected from a given source if light-colored paints of high reflectance value are used.

Those interested in photography know that a camera film responds more rapidly when the illumination is greater. That is why we can use shorter exposures on brightly lighted objects. Experiments demonstrate that the eye also can see more rapidly when greater illumination is provided. We also know that camera lenses provide greater depth of focus and sharpness of detail when the size of aperture is reduced. I am inclined to believe that the eye behaves in the same way, thus further accounting for the ease of vision found when the quantity of illumination is increased.

Returning now to our cannery lighting surveys, the number and variety of difficult seeing tasks made it evident that much time would be required to make the studies necessary to obtain the factual information upon which sound recommendations, especially for supplementary lighting, could be based.

N.C.A.-Sponsored Fellowship

To supply this need, the National Canners Association has sponsored a Cannery Lighting Research Fellowship at the Illumination Laboratory at Stanford University. Work under this fellowship started in September, 1946, and will continue until August, 1949. During the time required for the I.E.S. studies of general lighting, much of the research fellow's time was devoted to cannery lighting surveys and to the development of information needed by the committee in the preparation of the manuscript for its first report dealing with the general illumination of canneries.

In the work on supplementary lighting the research fellow first endeavored to study and define the precise nature of the seeing tasks encountered in the handling of products which could be studied in the Western states. This data will establish the scope and nature of the information which must be provided in reports on supplementary lighting for canneries.

Recommended values of illumination for general lighting have been developed by the I.E.S. committee, and are included in Table A-1 of the recently published I.E.S. Lighting Handbook under the title "Levels of Illumination—Good Current Practice". These represent measured average values, maintained in service, on a horizontal plane 30 inches above the floor. These values apply to measurements of the lighting system *in use*, not simply when the lamps and reflectors are new and clean.

To insure that a given illumination will be maintained, it is necessary to design the system to give initially some 50 percent more light than the recommended value. In locations where the dirt will collect rapidly and where adequate maintenance is not provided, the initial value may well be even higher.

The levels of illumination which have been recommended are not ideal values for the needs of the seeing tasks involved. They are studied economic values between average foot-candle levels now found in canneries and the optimum values desired.

The levels of illumination for general lighting in canneries which have been recommended by the I.E.S. committee are as follows:

	(Maintained in service)
Receiving department	20 footcandles
Preparation department	30 "
Container handling	20 "
Canning department	30 "
Processing department	20 "
Storage and warehouse departments	10 "

In making lighting surveys in canneries, it was found that additional supplementary lighting was necessary for many canning operations, particularly in the preparation, canning, inspection, and container handling departments. Those requirements have been the subject of special investigation, and special reports are being prepared as the information becomes available.

To provide the required illumination, a balanced combination of the general lighting indicated plus specialized supplementary lighting is often necessary. The design and installation of the combination system must not only provide a sufficient amount of light, but also the proper direction of light, diffusion, and eye protection. As far as possible, it should eliminate direct and reflected glare as well as objectionable shadows, and should provide a proper balance of illumination to avoid high contrasts.

I want to stress the importance of proper maintenance of lighting equipment. Striking improvemements may be obtained by repainting, cleaning lamps and reflectors, and relamping. A definite system should be established to insure that skylights, side windows, lamps, and accessories are at all times kept clean, in proper adjustment and in good repair. The recommended method of determining a suitable schedule is to check the illumination periodically with a light meter. When the illumination has decreased to 70 percent of its initial value, the lighting equipment should be washed.

Supplementary lighting for canneries embraces a wide diversity of lighting techniques. It is necessary where higher than general illumination levels are required, where directional light is necessary, and where the use of colored light will aid in grading, sorting, trimming, or inspection. Proper lighting can be recommended only after the seeing task has been carefully defined and the working conditions under which the operators must function have been determined. Because of the scope of supplementary lighting, a series of articles are being written, each dealing with some product or group of products, or with some general aspect of cannery lighting. It is hoped that these articles will become available to the canning industry during 1949. Five of them are now being drafted, and others will be prepared during the year.

The first of these, entitled "Seeing Principles Involved in Supplementary Lighting", deals primarily with the function of the eyes in seeing and discusses the factors important in making seeing easier. This first article is therefore somewhat technical, but has been prepared so that cannery engineers may have an understanding of the principles involved and certain conditions to be met in providing light for the difficult seeing tasks.

The second article in the series is entitled "Supplementary Lighting for Apricots and Peaches". In this report the average fruit cannery is considered, one department after another, and the problems of supplementary lighting are discussed. Recommendations based upon observations in canneries and research at the Stanford Illumination Laboratory are then presented. The report includes typical layouts for belt inspection units and indicates how lighting units may best be located to achieve their primary object.

The third report is entitled "Light Sources for Canneries". The first draft of this report is now being prepared. It discusses the various types of light sources which are available and indicates the best sort of application for each kind of unit. Special attention is given to the use of heat-resistant glasses, shock-resistant glasses, and other means commercially available whereby greater safety and protection against product contamination may be achieved.

The fourth report is entitled "Lighting for Tomato Canning". This report will present material similar to that described for the report on "Supplementary Lighting for Apricots and Peaches," except that it will be directed toward the lighting problems peculiar to tomato cannery operations.

The fifth report is entitled "Lighting for Container Inspection." This study was undertaken because of the need for improvement in the supplementary lighting used for glass container inspection. The test unit developed at the Stanford Illumination Laboratory includes the following features: (1) Illumination of the glass containers by high-intensity transmitted light from a translucent plate in front of which the container will pass, (2) vertical inspection of the interior of the container by observation through a mirror placed above the jar at an angle of about 45 degrees, (3) illumination of the general background at a fairly high intensity to avoid the eyestrain experienced when there is too great a difference in intensity between the light coming from the translucent illuminator and that from the general background, (4) rotation of the container through an angle of about 90 degrees to permit a second inspection to reveal flaws in the side walls which would be obscured during the first inspection, (5) operation of the entire unit at a speed at which the eye can perform the task. Before this report can be completed, additional studies on metal container inspection must be made.

It takes time to see. This applies not only to container inspection but to all inspection of moving objects. But remember also that you can see *faster* with *more light*. Within reasonable limits, high intensity of illumination may be used to speed up seeing, when the rate of flow has been reduced to the minimum practicable for cannery operation. When the intensity of direct illumination is high, the level of background, or general illumination, also, must be increased in order to hold the contrast ratio within reasonable limits.

The improvement of seeing conditions involves many factors. We must learn to use them all to attain the highest efficiency.

Corn Standards Meeting

An important meeting of corn canners was held in Atlantic City January 17 in connection with the National Canners Association's Annual Convention. The purpose of the meeting was to acquaint corn canners with requirements to be looked for in the standard of identity, standard of fill-of-container, and minimum standard of quality which the Food and Drug Administration plans to submit as a basis for a public hearing which has been tentatively set for March 15. The meeting was well attended by corn canners from all of the corn canning areas.

A committee of corn canners has been working for two years through the N.C.A. to accumulate statistical information and laboratory data on all phases of this important product and to furnish the Food and Drug Administration with data and samples.

There was full discussion of each of the many parts of the proposed standards. H. T. Austern, N.C.A. counsel, explained certain legal phases and emphasized the necessity for more complete information from the canners in order to properly represent the industry at the hearing.

It is expected that the proposal will appear in the *Federal Register* in the near future.

The N.C.A. will request certain specific information and samples of all corn canners by means of a follow-up questionnaire to the one issued July 13, 1948. It is urged that each corn canner give this his immediate attention and that the State Secretaries canvass their members to be sure that each area is included in the report.

Convention Resolutions

The Right to Meet Competition

Continued confusion and uncertainty in the legal rules governing the propriety of delivered pricing, freight absorption, and the meeting of competition by individual sellers constitutes a serious impediment to the economy. To require inflexible f.o.b. factory pricing or to impose limitations on the meeting of competition in good faith by individual sellers, will cause vast changes throughout American business and result in economic upheaval and maladjustment whose impact will fall upon the growers, workers, canners, and the communities in which they work and live. The members of this Association abhor both price conspiracies and monopoly in any form, and endorse all sound efforts to curb conspiracy and eradicate monopoly. By the same token, the Association believes that the public interest will be effectively served and a free economy fostered by dissipating the existing confusion and doubts concerning the legal propriety of individual pricing practices or the good faith meeting of competition by individual sellers.

Amendment of Food Standards

Recognition is needed that the processing art is not static and that new methods and products are constantly in the process of development. To this end the Association urges that appropriate provision be made, either by adequate administrative regulation, or if necessary by amendment of the Federal Food, Drug, and Cosmetic Act, to permit the interstate shipment, on a trial basis for a reasonable time, of any processed food for which a standard of identity has been promulgated but which contains additional wholesome ingredients whose inclusion is not permitted by the identity standard.

Publicity for Canned Food Values

Continued maintenance of high quality, adequate production, and the availability of supplies of canned foods at reasonable prices have enabled the industry once again to satisfy the sustained consumer demand for its products. The industry is proud of its record: Gratified that the individual initiative and courage of thousands of canners continue to make it possible for the average worker's earnings to go considerably further in the purchase of canned fruits, vegetables, and other canned products than in the prewar years; that the industry affords an ever important marketing outlet for thousands of farmers; and that its research and advancing processing techniques and efficiency enable it to continue to bring the harvests of the field and the catch of the sea to the American public.

Yet in the period of record high food costs during the past year, it was the responsibility of the Association both to the public and to the industry to bring home vividly to the American housewife the important economies as well as high nutritional values available in canned foods. This responsibility for public education was discharged in efficient fashion by the dissemination of the message of double value in health and in dollars through every available medium of public information to reach more than 80,000,000 consumers.

While commendation of one particular activity of the Association cannot detract from the over-all high level of performance, it would be remiss for this Association not to commend in highest terms the efforts of Secretary Carlos Campbell and Information Director Nelson H. Budd for this splendid and effective effort.

Descriptive Labeling

Ever increasing recognition of the Association's descriptive labeling program by canners, distributors, and the consumers in whose interest the program was formulated, provides a gratifying stimulus to its further development. Contributing measurably to more informative labeling through adoption of descriptive labeling has been the Association's motion picture "Better Labels." The Association urges upon every canner, distributor, and other organization merchandising canned foods under its own labels, the adoption of the descriptive labeling approved by the Board of Directors and the Distributors Advisory Committee.

Contributors to Association Buildings Fund

Resolved, That the Association express its grateful appreciation to each of the suppliers and members of allied industries who have generously contributed to the Association Buildings Fund in keeping with their continuing interest in the development of the canning industry.

President Cumming

Contributing vastly to the sustained success of this Association have been the superb qualities and dynamic force of the men who annually give it active leadership. The commanding stature of Howard T. Cumming as an organizer, executive, and sage counselor have long since become known to his fellow canners. In the Presidency of the Association he was offered an opportunity for even broader service that confirmed to an ever widening group of men in the food industry and in government his strength of character and seemingly infinite capacity for effective effort. Inevitably those with whom he works become his friends. Seldom does any man use plain words to reflect as profound thought, or forthright speech to suggest as sound solutions. Conviction is never manifested with more innate courtesy, nor is firmness tempered with equal kindness. Sincerity in desire and deed is not often combined with as undeviating will or as uncompromising standards of excellence in execution. Sagacity not often includes so keen a sense of humor; and courage rarely rests on such real humility and honest understanding of the problems and aspirations of others. With these great gifts, Howard T. Cumming measures full well to his own inexorable standard: For the Association and the canning industry, "He performs effectively." To him both record their profound gratitude.

Appreciation for Speakers, Allied Trades and Press

In large measure the purpose of the Annual Convention is to afford to those in attendance the opportunity of hearing informative and provocative discussions by the guest speakers, to participate in the activities of other cooperating associations in the food trades and the allied industries, and to disseminate information through the coverage of the daily and trade press and radio networks. The Association is deeply appreciative of their invaluable aid in making the 1949 Convention a success and directs that the President and the Secretary appropriately express to each of them the Association's sincere appreciation of their friendly cooperation and valuable contributions.

Necrology—1948

When harvest ends, the work of season done,
And autumn turns the land to winter cold.
When canners all to yearly meetings come,
With friendly hand to welcome young and old;
Assembling there within the council hall;
With sadness soon, the quest for missing face,
Companion who answereth not the call;
And each of us in recollections trace,
In sorrow deep, the deeds so nobly done,
By forthright friend in home and market place,
Who willing worked and highest honors won,
Achieving what time cannot soon erase;
We should not mourn these men who lived so full
And goodly lives, though all too early gone
From each of us, their friends; and firmly rule
To honor them in cherished memory long.

Carl C. Austin	E. L. Kossow
Fred B. Baum	J. S. Morgan
Miriam Birdseye	Erma N. Nass
C. O. Bratley	Pratt D. Phillips
Charles A. Burckhardt	Karl S. Reynolds
Henry W. Chavis	Edward Salter
George W. Cobb, Jr.	Charles B. Silver
Sidney P. Craig	Jerome M. Smucker
Hiram K. Defendorf	Lougee Stedman
Daniel Degan	James Stoops
Alfred W. Eames	John W. Thompson
George F. Grob	William L. Thompson
Alvah L. Hager	C. H. Tiedemann
William H. Harrison	Gilbert C. Trego
Scott A. Holman	Francis X. Weix
Irwin M. Isaacs	Clay P. Whiteford
Charles Kemp	D. E. Winebrenner, Jr.

N.C.A. Officers and Directors

MC GOVERN ELECTED PRESIDENT, HENRY P. TAYLOR VICE PRESIDENT; BOARD NAMED FOR 1949

John F. McGovern, director of public and industrial relations with the Minnesota Valley Canning Co., Le Sueur, Minn., was elected President of the National Canners Association at the opening general session. Mr. McGovern succeeds Howard T. Cumming, president of Curtice Brothers Co., Rochester, N. Y.

Other officers elected at the same session include: Vice President—Henry P. Taylor, Taylor & Caldwell, Inc., Walkerton, Va.; Secretary—Carlos Campbell, Washington, D. C.; and Treasurer—Frank E. Gorrell, Washington, D. C. Mr. Campbell and Mr. Gorrell continue in office, both having held similar positions during 1948.

Thirty-five Directors of the Association also were elected, and 37 members of the Board were held over from 1948.

Mr. McGovern has taken an active leadership in canning industry affairs. He becomes the 37th canner to serve as head of the N.C.A. during its 42 years of existence. He served during 1948 as First Vice President of the Association, and has a record of participation in numerous N.C.A. activities.

Mr. McGovern has served as chairman of the National Canners Association's Legislative, Manpower, and Social Security Committees, and has participated in a number of conferences leading to the implementation of a national farm labor program. He also has served as president of the Minnesota Canners Association.

Mr. Taylor has served two terms as a member of the N.C.A. Board of Directors, and has been a member of various Association committees. During 1948, he served on the Public Relations Committee.

The following directors were elected or were held over and will serve the Association during the term indicated:

N.C.A. Board of Directors

Directors Whose Terms Held Over

William R. Benner, Streator Canning Co., Streator, Ill.

J. Logan Bloodworth, Cherokee Products Co., Haddock, Ga.

Gordon Bowman, Bowman Apple Products Co., Inc., Mt. Jackson, Va.

Fred C. Bush, Bush Bros. & Co., Dandridge, Tenn.

A. L. Cramer, Engelman Products Co., Elsa, Texas

Clinton W. Davis, Jr., Portland Packing Co., Portland, Me.

Herbert C. Davis, Terminal Island Sea Foods, Ltd., Terminal Island, Calif.

Roy W. Demeritt, The Demeritt Co., Waterbury, Vt.

E. J. Draper, Treesweet Products Co., Santa Ana, Calif.

Edward H. Dunlap, Plymouth Canning Co., Plymouth, Ind.

Howard J. Fuhremann, Minnesota Valley Canning Co., Lanark, Ill.

Alfred H. Funke, P. J. Ritter Co., Bridgeton, N. J.

T. O. Goeres, Lodi Canning Co., Lodi, Wis.

L. M. Jones, Washington Canners Coop., Vancouver, Wash.

H. E. Kelley, H. E. Kelley & Co., New Church, Va.

Ernest E. Killion, Jr., Vincennes Packing Corp., Vincennes, Ind.

Leo T. Kreielsheimer, Kadiak Fisheries Co., Seattle, Wash.

William C. Kunzman, Kuner-Empson Co., Brighton, Colo.

Steve Lange, Owatonna Canning Co., Owatonna, Minn.

Harold J. McCarty, Brownsville Canning Co., Brownsville, Wis.

R. E. McCaughern, Starr Fruit Products Co., Portland, Ore.

Robert W. Mairs, H. J. McGrath Co., Baltimore, Md.

F. M. Moss, Idaho Canning Co., Payette, Idaho

Peter J. Naeye, Marion Canning Co., Inc., Marion, N. Y.

L. E. Neel, Turlock Cooperative Growers, Modesto, Calif.

Robert Payne, Eau Claire Packing Co., Eau Claire, Mich.

M. B. Pike, Holmes Packing Corp., Eastport, Me.

C. L. Rogers, Point Adams Packing Co., Hammond, Ore.

Robert D. Schenkel, Greencastle Packing Co., Inc., Greencastle, Pa.

Elton S. Shaw, Sunny Slope Farm, San Jose, Calif.

James M. Shriver, The B. F. Shriver Co., Westminster, Md.

Albert T. Smith, Smith Canning Co., Clearfield, Utah

C. Howard Sweatt, Besco Products Co., Orlando, Fla.

T. C. Tait, Swift & Co., Chicago, Ill.

Ronald Wadsworth, California Packing Corp., Ogden, Utah

Norman L. Waggoner, Santa Clara Packing Co., San Jose, Calif.

E. B. Woodworth, Hawaiian Pineapple Co., Ltd., San Francisco, Calif.

Directors Elected To Fill Unexpired Terms

Floyd Asher, Clarksville Canning Co., Clarksville, Iowa (Term expires 1950)

Harry Di Cristina, Holly Hill Fruit Products, Inc., Davenport, Fla. (Term expires 1950)

John W. Speyer, Kauai Pineapple Co., Ltd., Kalaheo, T. H. (Term expires 1950)

Directors Elected for One Year

Samuel Blakemore, Roxanna Canning Co., Div. of the Churngold Corp., Cincinnati, Ohio

J. B. Hollabaugh, C. H. Musselman Co., Biglerville, Pa.

John F. O'Hara, Davis Brothers Fisheries Co., Inc., Gloucester, Mass.

Directors Elected for Two Years

H. E. Apple, Jr., Birds Eye-Snider Division of General Foods Corp., Rochester, N. Y.

E. H. Bernhardt, Norfolk Packing Co., Plattsmouth, Nebr.

A. Edward Brown, Michigan Fruit Canners, Inc., Benton Harbor, Mich.

N. C. Buckles, Quality Food Products Co., Bradford, Ohio

Gordon Mann, National Cranberry Association, Hanson, Mass.

Directors Elected for Three Years

Milton E. Brooding, California Packing Corp., San Francisco, Calif.

E. E. Burns, Alton Canning Co., Alton, N. Y.

T. Donovan, Florida Fruit Canners, Div. of L. Maxcy, Inc., Frostproof, Fla.

Harry Draper, Draper Canning Co., Milton, Delaware

S. A. Ferrante, Oxnard Canners, Inc., Monterey, Calif.

William H. Foster, Stokely Foods Inc., Oakland, Calif.

W. Howard Green, Concord Foods, Inc., Concordville, Pa.

Orlin C. Harter, Harter Packing Co., Yuba City, Calif.

Henry McK. Haserot, Hawaiian Canneries Co., Ltd., Kapaa, T. H.

F. C. Heinz, H. J. Heinz, Co., Pittsburgh, Pa.

Fred E. Jewett, G. S. and F. E. Jewett, Norridgewock, Me.

F. Lowden Jones, Walla Walla Canning Co., Walla Walla, Wash.

Julian McPhillips, Southern Shell Fish Co., Harvey, La.

Keith More, Merrell Canning Co., Harlan, Iowa

Maxwell N. Naas, Naas Corp. of Indiana, Portland, Indiana

Albanus Phillips, Jr., Phillips Packing Co., Inc., Cambridge, Md.
Earl A. Randall, North Ogden Canning Co., Ogden, Utah
Arthur L. Reiling, Birds Eye-Snider Division, General Foods Corp., Hillsboro, Ore.
G. C. Scott, Minnesota Valley Canning Co., Le Sueur, Minn.
T. C. Slaughter, T. C. Slaughter Co., Reedville, Va.
Joseph M. Steele, Steele Canning Co., Springdale, Ark.
O. L. Teagarden, The J. Weller Co., Oak Harbor, Ohio
E. E. Willkie, Libby, McNeill & Libby, Chicago, Ill.
R. H. Winters, The Larsen Co., Green Bay, Wisconsin

1949 Finance Committee

Also approved at the closing session of the Convention was the personnel of the Finance Committee for 1949. As announced by President McGovern, it is as follows:

Howard T. Cumming, chairman, Curtice Brothers Co., Rochester, N. Y.
Harold K. Bachelder, Ladoga Canning Co., Indianapolis, Ind.
H. J. Barnes, Kaysville Canning Corp., Kaysville, Utah.
E. B. Cosgrove, Minnesota Valley Canning Co., Le Sueur, Minn.
S. B. Cutright, Illinois Canning Co., Hoopeston, Ill.
Clinton W. Davis, Portland Packing Co., Portland, Me.
Ralph O. Dulany, J. H. Dulany & Son, Fruitland, Md.
A. T. Flynn, Reid, Murdoch & Co., Chicago, Ill.
William A. Free, Hungerford Packing Co., Hungerford, Pa.
H. K. Funderburg, Rock Valley Canning Co., Belvidere, Ill.
Frank Gerber, Gerber Products Co., Fremont, Mich.
Walter L. Graefe, Pomona Products Co., Griffin, Ga.
Herbert E. Gray, Barron-Gray Packing Co., San Jose, Calif.
Frank A. Harding, Wm. Underwood Co., Watertown, Mass.
G. Sherwin Haxton, Haxton Foods, Inc., Oakfield, N. Y.
Marc C. Hutchinson, Michigan Fruit Canners, Inc., Fennville, Mich.
Herbert F. Krimendahl, Stokely-Van Camp, Inc., Indianapolis, Ind.
Carroll E. Lindsey, Lakeland Highlands Canning Co., Highland City, Fla.
Carl N. Lovegren, United States Products Corp., Ltd., San Jose, Calif.
R. G. Lucks, California Packing Corp., San Francisco, Calif.
H. E. MacConaughey, Hawaiian Pineapple Co., Ltd., San Francisco, Calif.
John F. McGovern, Minnesota Valley Canning Co., Le Sueur, Minn.
Art Oppenheimer, Marshall Canning Co., Marshalltown, Iowa
Robert C. Paulus, Paulus Bros. Packing Co., Salem, Ore.
M. C. Peters, Floridagold Citrus Corp., Lake Alfred, Fla.
E. N. Richmond, Richmond-Chase Co., San Jose, Calif.
H. N. Riley, H. J. Heinz Co., Pittsburgh, Pa.
Emil Rutz, Schuckl & Co., Inc., Sunnyvale, Calif.
R. L. Smith, Kuner-Empson Co., Brighton, Colo.
Henry P. Taylor, Taylor & Caldwell, Inc., Walkerton, Va.
J. B. Weix, Oconomowoc Canning Co., Oconomowoc, Wis.
Oliver G. Willits, Campbell Soup Co., Camden, N. J.
E. E. Willkie, Libby, McNeill & Libby, Chicago, Ill.
Paul H. Wolf, Roach-Indiana Corp., Gwynneville, Ind.

Officers Elected by Other Associations

Officers of other trade associations, elected at their respective annual meetings last week in Atlantic City, are as follows:

National-American Wholesale Grocers Association

President—Arthur W. Lutz, president, Smart and Final Co., Ltd., Los Angeles; executive vice president—M. L. Toulme, New York, N. Y.; treasurer—J. Stanley Seeman, Seeman Bros., Inc., New York, N. Y.; chairman of the board—Francis L. Whitmarsh, Francis H. Leggett & Co., New York, N. Y. (all reelected).

Association of Canners State and Regional Secretaries

President—W. D. Jones, Illinois Canners Association, Streator, Ill.; vice president—William H. Sherman, Association of New York State Canners, Inc., Rochester, N. Y.; secretary-treasurer—C. R. Tulley, Northwest Canners Association, Inc., Portland, Ore.

Corn Canners Service Bureau

President—Edward H. Dunlap, Plymouth Canning Co., Plymouth, Ind.; first vice president—George A. Borg, Northland Canning Co., Cokato, Minn.; second vice president—Parker Mitchell, Jr., F. O. Mitchell & Brother, Inc., Perryman, Md.; secretary—Richard E. Schlecht, Rossville Packing Co., Rossville, Ill.; executive secretary-treasurer—Harvey R. Burr, Madison, Wis.

Young Guard Society

President—William A. Cole, Independent Lithograph Co., San Francisco; first vice president—W. Ennis Parker, Pomona Products Co., Griffin, Ga.; second vice president—William Hughes, Chisholm-Ryder Co., Inc., Columbus, Wis.; secretary—Robert L. Eirich, Crocker Union Lithograph Co., Baltimore, Md. (reelected); treasurer—Robert W. Mairs, H. J. McGrath Co., Baltimore, Md. (reelected).

Canning Machinery & Supplies Association

President—J. C. Whetzel, Carnegie-Illinois Steel Corp., Pittsburgh; vice president—E. A. Hildreth, Owens-Illinois Glass Co., Toledo; secretary-treasurer—S. G. Gorsline, Battle Creek, Mich.; assistant secretary—O. L. Walker, Battle Creek, Mich. (all reelected).

Old Guard Society

President—William C. Schorer, Sauk City Canning Co., Sauk City, Wis.; first vice president—Harry McCartney, Stokely-Van Camp, Inc., Tampa, Fla.; second vice president—F. E. Flynn, Edgett & Burnham Co., Newark, N. Y.; secretary-treasurer—S. G. Gorsline, Battle Creek, Mich. (reelected).

Luncheon Club Addresses

During Convention week Happer Payne, Assistant Secretary and Director of the Labeling Division, spoke before the Atlantic City Kiwanis Club, on Thursday, January 13, and the Rotary Club of that city, Tuesday, January 18. On both occasions he discussed the size and scope of the canning industry, and its contribution to the American dietary. Mr. Payne stated that the tremendous growth and acceptance of canned foods has been due to the fact that they are convenient, economical, and wholesome, and retain very large portions of the original food values of the raw product.

He outlined the benefits to the industry and to the public at large which have been achieved by the pooling of information and research through the medium of the National Canners Association, and stated that as a result of this pooling of interests individual canners—large and small—are rich in their scientific information. He explained also that as a direct service to consumers, the N.C.A. has undertaken with considerable success the development of a systematized program of labeling its products for consumer information.

Meeting of N.C.A. Directors

Preliminary to the General Sessions of the 42nd Annual Convention, the Board of Directors of the National Canners Association held an all-day session at the Traymore Hotel, on Sunday, January 16, and considered reports of Chairman Emil Rutz of the Finance Committee; Walter L. Graefe and H. Thomas Austern for the Legislative Committee; Chairman Luke F. Beckman of the Manpower Committee; Chairman W. F. Dietrich and the following sub-chairmen of the Buildings Committee—H. J. Humphrey, Milton E. Brooding and Fred C. Heinz; Chairman H. N. Riley of the Scientific Research Committee; Chairman R. H. Winters of the Agricultural Policy Committee; and Chairman R. A. Friend of the Convention Committee. Also the Board heard the report of the Trustees of the Trust Indenture Fund by Forrest F. Heaton, Director of the N.C.A. Claims Division; on the New York State Tax, by Howard Castle of Counsel's office; and on the inclusion of the personnel of the Northwest Branch under provisions of the N.C.A. Retirement Fund, by G. C. Scott.

Actions of the Board

The Board took the following actions:

Approved a budget for the Association's operations in 1949 totaling $835,127.00, as compared with the 1948 budget of $890,423.00.

Adopted the Administrative Council's recommendation for continuation through 1949 of the current rate of membership dues—3/10ths of a cent per case on seasonal products and 3/20ths of a cent on nonseasonal, plus 10 percent, subject to a minimum dues payment of $100 per year.

Passed resolutions ratifying the work of the Buildings Committee, continuing its program, and granting it authority to carry the program through to completion and to borrow, with Board or Executive Committee approval, not in excess of $300,000.

Passed a motion directing the Association to exert every effort to plan the 1950 Convention so that canners and brokers may meet at the same time and place.

Continued the N.C.A. Agricultural Policy Committee and received the report of its chairman.

Changed the Association by-laws so as to eliminate the office of second vice president.

Passed a resolution commending the work of H. N. Riley in his service as Chairman of the Research Committee.

Reconstituted the following Special Committees—Conference, Convention, Procurement, Manpower. (The Buildings Committee is continued by virtue of previous action and the Agricultural Policy Committee is constituted as a Special Committee.)

Brought the personnel of the Northwest Branch of the Association under the N.C.A. Retirement Plan subject to the fulfillment of certain specified requirements.

Executive Committee Nominations

President Cumming appointed a committee consisting of L. E. Neel, Albert T. Smith and Clinton W. Davis, Jr., to nominate from the membership of the new Board candidates for the Executive Committee of the N.C.A. (This nominating committee met during the Convention after the new Board was elected on Monday, January 17, and nominated the following to serve as the Executive Committee for 1949:

Fred M. Moss, Idaho Canning Co., Payette, Idaho.

Milton E. Brooding, California Packing Corp., San Francisco, Calif.

Henry McK. Haserot, Hawaiian Canneries Co., Ltd., Kapaa, T.H.

James M. Shriver, The B. F. Shriver Co., Westminster, Md.

E. E. Willkie, Libby, McNeill & Libby, Chicago, Ill.

The Board will be polled by mail on these nominations).

New York City Gross Receipts Tax

Attempts by New York City tax authorities to collect a gross receipts tax from out-of-city food processors were described by Howard P. Castle of N.C.A. Counsel's office. An explanation of the City's tax provisions and of the City's efforts in this direction appears in the INFORMATION LETTER of January 8, page 2.

Report on Manpower

Chairman Beckman, of the Manpower Committee and a member of both the Special Farm Labor Committee of the U. S. Employment Service and of the National Farm Labor Conference, reported that record high industrial employment was continuing the need for the importation of foreign agricultural field workers. In excess of 40,000 such workers were employed under work contracts during 1948, he said. These workers were principally Mexican Nationals, he explained; but a substantial number of British West Indians also was employed. However, owing to the unsatisfactory terms and administration of the Mexican agreement, West Indians were used for the most part on canning crops, he stated. Negotiations with Mexico for the use of her Nationals this year will commence soon, Mr. Beckman reported, with agricultural advisors to the State Department and USES opposing Mexican demands for a health insurance clause in the agreement that is to be negotiated.

Report on Buildings Program

The unanimous action of the Board in adopting four resolutions dealing with the Buildings Program made an accomplished fact of a year's intensive effort in blue-printing modern facilities for Washington headquarters and laboratory and for the West Coast laboratory. The resolutions were adopted following reports presented by Chairman Dietrich of the over-all Committee and by Mr. Humphrey of the Eastern subcommittee, Mr. Brooding of the Western subcommittee, and Mr. Heinz, who has acted as chairman of a fund-raising subcommittee.

Briefly, the resolutions expressly ratified the work of the Committee and of the Eastern and Western subcommittees; authorized it to proceed with the buildings program until the work has been completed; authorized the Committee to execute any necessary contracts; and authorized the Committee to borrow, with the approval of the Board or the Executive Committee, not in excess of $300,000.

In reporting for the over-all Committee, Chairman Dietrich pointed out that the Board must finally conclude to go ahead, abandon, or postpone the program. Although the Committee was offering no recommendation but was leaving the decision to the Board, Chairman Dietrich stated that the resolutions summarized above would permit the Committee to complete its work. He urged the Board members to inspect the exhibit of the Buildings Committee in the N.C.A. booth at the Canning Machinery & Supplies Exhibit, where plans of the Washington and Berkeley buildings were displayed along with scale models of the Washington building and its laboratory floor, as well as artists' sketches of both buildings. (*Editor's Note—Illustrations and descriptions of the buildings will be published in a forthcoming issue of the* INFORMATION LETTER.)

Chairman Dietrich reviewed the $1,500,000 financial program approved by

the Board in January, 1948, and reported that in addition to the $300,000 of Association reserve funds that were transferred to the Buildings fund, another $300,000 had been collected or pledged from the special dues assessment with about $60,000 yet to be accounted for. In addition to these funds, he reported that suppliers had contributed or pledged $400,000. With the addition of the $200,000 assessed value of the presently occupied properties of the Association, he pointed out that more than $1,200,000 of the total was assured.

Mr. Heinz, who was named chairman of a special subcommittee of the Buildings Committee to carry on a drive among machinery and supply firms, reported very good prospects of $100,000 being contributed toward furnishing the laboratories. Other sources of contribution are being actively pursued, he stated.

Mr. Humphrey reported that following the November meeting of the Board, the Eastern subcommittee had proceeded with plans for a Washington building costing a maximum of $950,000, including the purchase price of the land. The architect's (Abbott, Merkt & Co.) estimate of the cost of the building, including approximately a 5 percent contingency, he stated, has been verified by engineers of the American Can Co. as well as by those of his own staff at Birds Eye-Snider. In view of the current trend in the construction industry, Mr. Humphrey forecast obtaining firm bids. Detailed plans and specifications will be ready about March 1, a contract signed about April 1, and the building ready for occupancy about February 1, 1950, Mr. Humphrey concluded.

The report of the Western subcommittee, delivered by Mr. Brooding, also looked toward early completion of new N.C.A. quarters on the Coast. Mr. Brooding reviewed cost estimates of remodeling the building located at Pine and Steiner Streets in San Francisco and the construction of a new building on the property in Berkeley purchased over a year ago. In consideration of the long-term interests of the Association, the subcommittee recommended the construction of a new building on the Berkeley site and is prepared to proceed with the execution of final plans and specifications, Mr. Brooding stated. Expectations are that a contract for construction can be let early this Spring and that the Steiner Street property, which the subcommittee had hoped could be economically remodeled, will be disposed of without loss, he said.

Heinz Names Fund Group

Fred C. Heinz, newly elected N.C.A. Director, who has been correlating the buildings program drive for funds from machinery and supplies firms, has appointed a subcommittee to assist in obtaining contributions from concerns located on the West Coast. The subcommittee is composed of Emil Rutz, Chairman, and R. G. Lucks, L. J. Taylor, and Robert C. Paulus.

Agricultural Policy Committee

On behalf of the Agricultural Policy Committee appointed at the May, 1948, Board meeting, Chairman Winters outlined the research conducted under the direction of the Committee and its work to date. He reported that the membership of the Committee had been expanded to embrace adequate representation for citrus producing areas, areas in which open market purchasing practices were used, and cooperative enterprises.

He further reported that the Committee had tentatively arrived at a number of ideas which are still to be reviewed in the necessarily intensive and continued study of these questions of long-range agricultural policy. It was felt that the position of the canning industry as an important marketing outlet for specialty crops must be adequately recognized in any long-range agricultural planning by the Federal Government.

The Committee was satisfied that price support programs, even as applied to basic crops and Steagall commodities, vitally affect canning crops. Where such supports competitively restrict production of canned foods or result in increased prices to the consumer they do not serve the national interest. At this time his Committee is of the opinion that price supports for perishable crops in most instances have been demonstrated to be impracticable and unworkable, and their use would be undesirable.

The Committee further believes, Chairman Winters said, that in the formulation of any long-range agricultural programs, the position of the processor and distributor, as well as the producer, must be considered; and that these interests should be permitted to participate in the formulation of long-range policies.

The Committee urged that all members of the industry become familiar with the various types of agricultural controls and with the developing thinking in this field; and that each canner endeavor to acquaint the individual growers in his area with the probable impact upon them of the various types of proposals.

The report of the Committee was received by the Board. The work to date of the Agricultural Policy Committee was commended; and the Committee was constituted a Special Committee of the Association and urged to continue and to expand its fundamental studies as the basis for developing an integrated policy for submission to the Board.

The full membership of the Agricultural Policy Committee is:

R. H. Winters, chairman, The Larsen Co., Green Bay, Wis.;

Luke F. Beckman, The Beckman & Gast Co., St. Henry, Ohio;

Edward H. Dunlap, Plymouth Canning Co., Plymouth, Ind.;

G. Sherwin Haxton, Haxton Foods, Inc., Oakfield, N. Y.

A. C. Ketzler, Bordo Products Co., Chicago;

R. G. Lucks, California Packing Corp., San Francisco;

Robert W. Mairs, The H. J. McGrath Co., Baltimore;

A. D. Radebaugh, Blue Mountain Canneries Div., Minnesota Valley Canning Co., Dayton, Wash.;

O. E. Snider, Blue Packers, Inc., Salem, Ore.;

Stran Summers, C. G. Summers, Jr., Inc., New Freedom, Pa.;

Joseph P. King, Birds Eye-Snider Div., General Foods Corp., Rochester, N. Y., ex officio; and

John F. McGovern, Minnesota Valley Canning Co., Le Sueur, Minn., ex officio.

Statement on Dues

In the Board discussion that followed the presentation by Chairman Rutz of the budget and the proposal for increasing the dues rate, F. M. Moss of the Executive Committee made the following statement in support of the action:

"I appreciate the fact that the gentlemen here today have come here thinking that we must retrench, that conditions are not as they were, that we are all considering the cutting of expenses and of saving money in our plant operations. We are fighting tax structures, fighting railroad rates, doing those things that we can to preserve our brick and mortar. Many of the men of this industry have been in it much longer than I have and have much more at stake. Yet my stake in relationship to the over-all of the Association is just like that of the little fellow who paid $1.40 dues.

"I am impressed with the hard work that the committees have done on this

subject, and with the contributions by the divisions of the Association who have met this problem of giving you something for the money you spend in this Association. I think, gentlemen, that we are just a little bit hesitant in expressing our appreciation in matters of this kind.

"The N.C.A. has grown to a tremendous organization. It is something that is vitally important not only to our own brick and mortar but is vital also to the standards and health of the people of the country we serve. Problems are foisted upon this Association that we do not ask for, taxes and matters of that kind. It seems to me that when you set up your cost structure on your books you look and watch for everything possible to cut your costs. You consider the fact that you pay your broker 3 percent; now you wish to pay him 2½; or you consider cutting out your sales organization, reducing your advertising a little bit, or perhaps advertising more—all of that is within the general planning of your business.

"But you only have to pay 3/10ths of a cent per case for the institution that really keeps your business going. You have access to the laboratories, the food standards work, the consumer complaints defense, the handling of your legal ramifications—and for all that you have paid 3/10ths of a cent a case or 3/20ths of a cent. Go into the plant and work like a dog to cut off a cent a case some place and what is a cent a case?

"To my way of thinking if we would work just as hard to cut off a cent a case some place else in this business and give it to the National Canners Association we would make a lot more money than we would trying to reduce dues in this Association.

"Consider the situation you would have without this Association—I'll bet your tax structure would be ten times what it is!"

Discussion of 1950 Convention

In the general discussion that took place on the subject of the 1950 Convention following the formal report of Chairman Friend of the Convention Committee, the members expressed their strong desire to achieve convention arrangements that will enable the canner and broker associations to meet together in the same city and at the same time, as has been the tradition for so many years, interrupted only by the 1949 arrangements which brought the N.C.A. Convention to Atlantic City in January and the National Food Brokers Association meeting to Chicago in March.

Mr. Friend pointed out that investigations produced only three available dates in Chicago for 1950—one, the week ending Christmas Eve; another, the week starting New Year's Day; and the third, the latter part of March—and the membership agreed that none of these periods was feasible. New York City has reported that it will not be able to furnish the facilities in 1950, but Atlantic City again is able to provide enough accommodations from January 16 to 26 for simultaneous housing of all the groups that customarily meet together, he said. *(Mr. Friend pointed out that these specific dates also are flexible if changes are necessary to meet all requirements.)*

On the basis of the Convention Committee's report, Director Lucks moved his preference for Atlantic City next year, with the understanding that brokers, buyers and supplymen meet jointly with N.C.A.

Mr. Friend indicated that the Committee and officers would proceed immediately to work out a satisfactory plan of over-all hotel allocations and schedules that would encompass the requirements of all participating. His formal Committee report follows.

REPORT OF CONVENTION COMMITTEE

By Robert A. Friend, Chairman

As you directed us at the Board meeting on November 12, your Convention Committee has explored, with the National Food Brokers Association, the possibilities of resuming in 1950 the traditional joint canners-brokers-buyer-supplier convention at the same time and place.

The two committees—of canners and brokers—met December 12, 1948, at N.C.A. headquarters in Washington, D. C. I can say that we met on a ground of mutual understanding and common aim. The broker representatives expressed the view at the start of the conversations that their membership-at-large prefers the joint convention arrangement.

The point was made that just as wholesale grocers, chain stores, super markets—all canned foods buyers—are important to canners and brokers, so are the non-canner principals important to the brokers.

It was agreed also that January 1 to mid-February is the best time to hold joint annual conventions.

It was agreed that whatever time schedule is finally fixed, it must be clearly stated and widely advertised to the respective memberships of the participating associations, with additional pressure on each to adhere faithfully to such schedules in their attendance.

It was felt also that strong efforts should be made by all participating associations to hold their attendance down to absolute essentials.

The broker representatives stated that they were not authorized to approve a joint Convention for 1950, but expressed the conviction that the NFBA Executive Committee and their membership-at-large would approve.

It was agreed that Carlos Campbell of the N.C.A., Watson Rogers of N.F.B.A., and S. G. Gorsline of the Canning Machinery & Supplies Association should together investigate the possibilities for a joint Convention in (1) Chicago, (2) New York, and (3) Atlantic City, in that order of preference.

This investigation has been completed with the full cooperation of these three representatives and the convention officials of the respective cities, with this result:

1. New York City is out. Their Convention Bureau states that New York cannot accommodate the over-all convention in 1950.

2. Chicago can give the next Convention three possible dates. These are December 19 to 24, 1949; January 2 to 7, 1950; and March 19 to 25, 1950. Your Committee is aware that a block of our membership is extremely anxious to return the Convention to Chicago, no matter what the sacrifice might have to be in terms of usual arrangements and practices, but in spite of that feeling, the Committee believes that the dates available in Chicago are not conducive to a successful Convention next year. One of these periods ends on Christmas Eve; the second would require some delegates to leave their homes before New Year's Eve; the third falls in March, which in our opinion is too late for such meetings.

3. Atlantic City can give us the number of rooms required to house canners, brokers, suppliers and buyers (with the restricted attendance suggested at the joint committee meeting of the canner and broker groups) and further adjustments that I will outline in a moment, and Atlantic City has reserved the period January 16 to 26 for our use if you so decide.

Obviously, the only recommendation the N.C.A. Convention Committee can make is that the 1950 Convention be held in Atlantic City, as a *joint* meeting of the three historical participating associations, with facilities and accommodations made available also for the buyers—wholesale grocers, super market, chain store and retail executives.

To accomplish this and to enable the Canners Convention to be held in one central city and enjoy the privilege of meeting with all other industry groups that are important to the industry and to each other, it is suggested by this Committee that the Convention in Atlantic City in 1950 be departmentalized, the first part to be devoted to sales contacts between principals,

brokers and buyers; the second to the theme of production to meet sales volume. Accordingly, it is recommended that:

The N.C.A. Convention start simultaneously with the convention of the National Food Brokers Association on Monday, January 16. This phase of the Convention should be known as a National Food Sales Conference, cosponsored by N.F.B.A. and N.C.A., and would involve only the sales departments of canner members to meet with brokers. During this period the Atlantic City hotel facilities would be made available to sales departments of N.C.A. members, to the National Food Brokers Association for housing its membership along with their noncanner principals and buyers. Beginning Saturday, January 21, the production staffs of canners would move in to conduct their meetings, and would occupy the same rooms held the previous week by sales representatives. This period would deal mainly with production and technical problems and during that period the Canning Machinery & Supplies Exhibit would be held and members of that organization be housed in the available hotel facilities along with the production men of member canning firms and others the N.C.A. would deem essential to this phase of convention activity.

It is realized that under this plan certain delegates from the Canning Machinery & Supplies Association would have to arrive at the Convention in advance of the Machinery Show which will open Saturday, January 21, in order to set up displays and exhibits. Certain adjustments of headquarters hotels would have to be made to cover the possibility of arrivals and departures of various groups overlapping by two or three days. The staff members of the various associations will be required to work the hotel allocations out in the most satisfactory manner possible and to submit such plans to their memberships, or their representative Convention Committees for approval.

Under this proposed arrangement, it will be the responsibility of the participating associations to see that their respective members are fully informed as to the exact Convention schedule of arrivals and departures so as to ensure that the *proper people* will be in attendance at the *proper time* to carry out their respective business.

It is recommended that the staff executives of the participating associations get together immediately to work out the important details of hotel allocations, because while this might be considered a routine detail of Convention management, it is a highly important factor in Convention policies and, in fact, can play a deciding part in over-all decisions and agreements to meet together.

In closing this report, looking to the future and basing its views on tried experience of past years, the N.C.A. Convention Committee recommends two changes in Convention procedure:

1. The N.C.A. Convention Committee should be appointed each year with a view to obtaining full geographical representation of the important canning areas.

2. The N.C.A. President and Secretary, who now have the power to book Conventions whenever expedient to do so, should decide on Convention times and places at least two years in advance, and the detail of allocations and of arrival and departure schedules, should be worked out that far in advance. In other words, this Committee feels and recommends that *right now* is the time to settle decisions and routine matters for *both* the 1950 and 1951 Conventions, and that both the 1951 and 1952 Convention decisions and detailed plans should be worked out and agreed upon together a year from now. One year does not appear to be sufficient time in which to handle the important task of managing annual conventions.

REPORT OF THE SCIENTIFIC RESEARCH COMMITTEE

By H. N. Riley, Chairman

Since our last meeting at Atlantic City, the Scientific Research Committee has met three times—once in May in Washington, again in November in Chicago, and again at Washington on Wednesday and Thursday, January 12 and 13. In addition to this, the local Laboratory Committees for the Washington Laboratory and the Western Branch Laboratory have been keeping in touch with the work of these laboratories as it developed during the year. While many know how these Committees function, it might be well to again explain that the local Laboratory Committees are made up of technical men who have an understanding of the programs outlined for the year's work and follow this work, the one Committee in the West and the other Committee in the East, to make certain that the needs of the industry are being taken care of as well as possible, and to advise on unforeseen developments from their knowledge of local conditions.

The Research Committee concerns itself primarily with the management of the two laboratories and discusses at length the budget, expenses, the amount of money being devoted to the various projects, and to over-all policy matters.

Copies of the Annual Report have been published and are either in your possession or you will shortly receive them. We have attempted this year to present the report in a readable fashion and, while it does contain much technical information, it also carries very good introductions to both the sections devoted to the Washington Laboratory and the Western Laboratory which sum up in laymen's language the work of these two laboratories. We are hopeful that the form of the report will make it interesting reading and that the members use it to acquaint themselves with the details of the work. We are, therefore, not attempting to go into any detail in this report to you.

A year ago we explained to the Convention our method of setting up the work for a year in advance with control charts, and we are happy to report this year that this manner of handling the work load is proving to be most satisfactory. The work falls into five main categories; namely, sanitation and waste disposal, bacteriology, processing, chemical, and microanalytical.

In the Washington Laboratory we spend some 1,600 man-hours on sanitation, 2,700 on waste disposal; 6,700 on bacteriology; 1,600 on processing; 2,000 on chemical; and 3,400 on microanalytical. In the Western Laboratory about 5,000 hours were spent on sanitation; 1,000 on waste disposal; 4,000 hours on bacteriology; 2,000 on processing; 8,700 hours on chemical; and 3,000 on microanalytical.

With very few exceptions the work was carried out as originally planned and the hours allotted to the work were with some variation spent as planned. It is interesting to note that we did not use as many hours for direct service to individual members as we had budgeted, which might indicate either that the industry was not faced with any unexpected problems during the past year, or are developing their technical staffs to such a point where they can better take care of their own problems where they arise. It is the recommendation of the Research Committee that members continue to develop their own technical staffs because food technology has developed to such a degree that a successful processor can hardly hope to do a first-rate job without his own technical controls.

The progress we have been able to make with our time budgeting program has encouraged us to seriously consider budgeting our money expenditures on the basis of projects. The Western Laboratory did this on a trial basis this past year and their report showing the cost in dollars of each of their projects was most interesting to the Committee. It was decided to continue this accounting on a trial basis for a further year to learn whether such information would be of sufficient value to justify the cost of accumulating it. After another year's experience, we will give further consideration to adopting such a program as standard procedure, and we may be able in a year or two to state

specifically in dollars what each phase of our work costs the Association.

Both laboratories kept within their financial budgets this past year. The Western Laboratory spent all of their fund; the Washington laboratory did not, principally because they were unable to employ some of the technical help necessary to carry out the program. With the managerial procedures that have been injected the last few years in both these laboratories, the statement can be made that the expenditure of our funds has been closely screened, and we feel that there is very little money being wasted. When we are faced, therefore, with the problem of considering some reduction in the budget we cannot promise to achieve that reduction and carry out the same program of work at lower cost. A reduction in the budget means a reduction in the activities. The Committee feels that it is for the Association to say how much money it wishes to spend for work of this sort, and it is for the Committee to decide how the money given us shall be spent to best meet the needs of the industry. We should be mindful at all times that we are not doing nearly the amount of work that we should like to do if funds were available, and we enlist the cooperation of the various laboratories already established in many of our members' plants for a combined attack on some of these problems that face the industry. The staffs of both the Washington and Western Laboratories are anxious to sponsor such cooperation and, in fact, we are already making good progress in this direction.

In discussing a possible reduction in the budget for the coming year, the Committee has felt that some of this reduction might well come in the field of sanitation. If we must get along on less, this work will be the first to be curtailed as we can only accommodate ourselves to such a reduced budget by eliminating some of our personnel. We sincerely regret any necessity for reducing personnel as we feel that we have in both laboratories an excellent, well balanced staff. The morale of both laboratories is something the Association can well be proud of. Their interest in their work, their willingness to accept suggestions and put them into effect has impressed the Committee, and we feel that with the present program of giving these groups proper quarters in which to carry on their work, the efficiency will be even better in the future than it has been in the past.

Convention Proceedings

(Concluded from page 11)

vice president of the Lyndonville Canning Company, Inc. and a member of the N.C.A. Convention Committee, as moderator.

This brought together expressions on the subject of merchandising from all facets of the production, brokerage and distribution phases of the industry. *(Full reproductions of the statements at the Symposium by the following will be found in the section starting on page 21.)*

Arthur Ehrenfeld, director and assistant treasurer, Francis H. Leggett & Company, representing the National-American Wholesale Grocers Association;

Charles S. Ragland, president of C. B. Ragland Company, representing the United States Wholesale Grocers Association;

Forrest L. Fraser, director of grocery merchandising, The Kroger Company, representing the National Association of Food Chains;

John P. Houck, partner in M. W. Houck & Bro., representing the National Food Brokers Association;

W. T. Dahl, operating partner, Dahl's Food Markets, representing the National Association of Retail Grocers;

Hugh J. Davern, vice president in charge of merchandising, Grand Union Company, representing Super Market Institute;

Paul S. Willis, president, Grocery Manufacturers of America, Inc., representing G.M.A.

John L. Baxter, partner, H. C. Baxter and Bro., representing the National Canners Association.

Two conferences occupied the time of delegates on Tuesday afternoon—The session under the chairmanship of Dr. Mahoney of the N.C.A. Raw Products Bureau, on "Special Aspects of Canner-Grower Relations," and the first of the two Canning Problems Conferences, with W. A. Brittin of Beech-Nut Packing Co., presiding. *(Papers of these Conferences appear in the sections starting on pages 50 and 65.)*

Wednesday morning, January 19, marked the Closing General Session, with President Cumming in the chair. At this meeting the report of the Committee on Resolutions was made by Chairman H. E. Apple, Jr., and the resolutions were voted by the Convention. *(They are reproduced in full on page 91.)*

The officers-elect were installed at this session and 1949 President McGovern took the gavel, following appropriate remarks welcoming him into his new office by Retiring President Cumming. Just before relinquishing his office to Mr. McGovern, Mr. Cumming said:

"I am going to depart from the cue sheet at this point to say something that I hope may be recorded in the minutes of this meeting.

"Accomplishment in an association of this kind is the work of many people. Certainly the greatest contribution to such headway as we may have made in the past year has come from our staff. As I have watched them work I should say that our staff is characterized by a marked degree of enthusiasm and devotion to their various tasks. With me the members of the staff have been highly cooperative. Carlos Campbell, in these respects you have set the pace and provided the leadership. To you and the staff I want to express my sincere thanks."

President McGovern then called Russell H. Winters to the platform. Mr. Winters paid a tribute to Mr. Cumming and presented him with a handsome silver Hallmark tankard as a remembrance of his year of leadership of the canning industry. *(Mr. Winter's remarks of eulogy are on page 12.)*

While the Closing General Session was in progress the final technical session was being conducted under the chairmanship of Dr. H. H. Mottern of the H. J. Heinz Company. *(The papers of this session also are included in the section beginning on page 65.)*

ACSRS Holds Annual Dinner

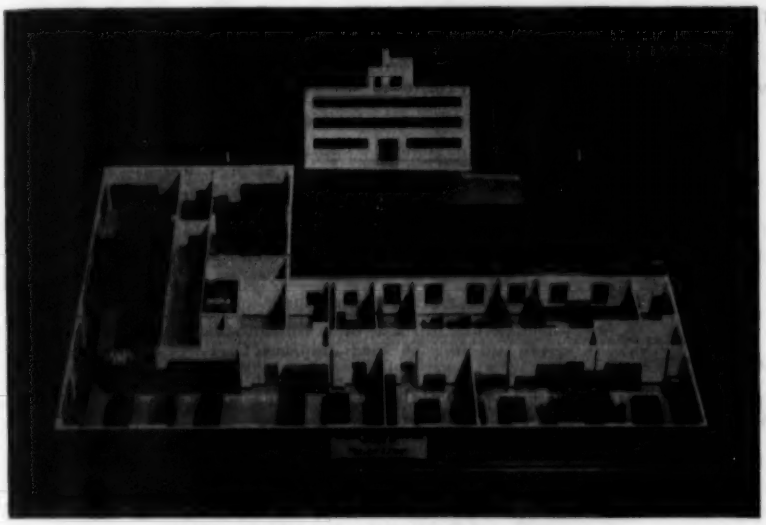
At the annual dinner and meeting of the Association of Canners State and Regional Secretaries held in Atlantic City on January 16, plans were discussed for a closer working relationship between State and regional associations with the N.C.A. on its building program, food standards work, collection and reporting of statistics, and LETTER reporting.

Host for the dinner was Carlos Campbell, Secretary of the National Canners Association. Guests included S. R. Smith and Eldon Shaw of the Fruit and Vegetable Branch of USDA and a number of N.C.A. staff members.

Canned Pea Association

At the meeting of the Canned Pea Association Board of Directors in Atlantic City on January 18, the report of the committee charged with development of the program for 1949 was presented and unanimously approved.

It is planned that in this program of publicity, trade relations and merchandising, Can Manufacturers Institute will play a prominent part as was true in this organization's 1948 activities. Directors, and Byrne Marcellus Company, managing agents, reported that membership support of the Canned Pea Association is developing favorably.



MODELS OF NEW N.C.A. HEADQUARTERS DISPLAYED

Above is a photograph of scale models of the laboratory floor and the exterior elevation of the new N.C.A. headquarters to be erected at 1133 20th Street, N. W., Washington, D. C. These models were part of the display in the N.C.A. booth at the exhibit of the Canning Machinery and Supplies Association in Convention Hall. Construction of the modern designed three-story stone-faced brick structure of reinforced concrete is scheduled for early this spring.

Publications for Convention

The Association, in the weeks and days immediately preceding the Convention, prepared and produced four publications for distribution and use there. These were:

Program of the 42nd Annual National Canners Association Convention—32-page pocket size publication giving details of Convention arrangements, listing the Association officers, the agenda of the meetings and conferences, the meetings of participating associations and a daily schedule of all convention events.

Telephone Directory—94 pages of Convention hotel room location and phone numbers of members of N.C.A., Canning Machinery & Supplies Association, Super Market Institute, National Association of Food Chains, other trade association, canned foods brokers and other sales representatives, government officials, and representatives of press and radio.

Annual Report of the Secretary—50 pages, presenting the Secretary's review of the Association's program and activities for the year 1948.

Annual Report of the Research Laboratories—44 pages, reviewing the activities of the Association's Laboratories and research programs of the year 1948.

Social Events of Convention

The outstanding entertainment feature of the Canners Convention was the 2½-hour musical extravaganza put on by Fred Waring and his world-famous Pennsylvanians, at the huge Warner Theater on the Boardwalk, Tuesday, January 18. For this occasion the Canning Machinery & Supplies Association were the generous hosts, issuing complimentary tickets to Convention delegates from all the categories in attendance. Attendance was capacity. Waring, as master-of-ceremonies, interjected comments pertinent to canning trade interests and made references to personalities of the various associations.

C.M.&S.A. also sponsored the Annual Dinner Dance at the Claridge Hotel, Saturday, January 15, also with full attendance, and with splendid entertainment. The usual Presidents and Secretaries tables were arranged for officers of the various organizations, and their wives.

The Old Guard Reception and Dinner was held Sunday, January 16, at Hotel Traymore. This traditional event annually brings together men who have contributed a minimum of 20 years of service to their industry. As usual, it brought together representative leaders from the production, brokerage, supply and distribution branches.

The Young Guard Banquet and Entertainment also was held at the Traymore. Its five-hour entertainment by professional entertainers filled the American Room to capacity.

Albanus Phillips Dies

News reached the Convention during the Opening General Session of the sad death of Albanus Phillips, 77, founder of the Phillips Packing Co., Inc., Cambridge, Md., and a life-long member, friend and supporter of the National Canners Association, at his home in Cambridge on January 17. He had been in ill health for two years and confined to his bed since last summer.

Mr. Phillips founded the canning firm 47 years ago. He was appointed a food counselor for the Government Colonization Expedition to the Antarctic headed by Rear Admiral Richard E. Byrd in 1933-34, and served in the same capacity during the expedition of 1940-41. Admiral Byrd named a mountain range in Little America the "Col. Albanus Phillips Mountains" in his honor.

Mr. Phillips served as an N.C.A. Director 1932-34. Following his retirement from the presidency of his firm in 1946, he was succeeded by his son, Albanus Phillips, Jr. Other survivors, in addition to his son Albanus, are another son, Theodore, who also is associated with the packing business, two daughters, and his wife, the former Daisy Alma Lewis.

Annual Reports Mailed

Copies of the Secretary's Annual Report for 1948 and the Annual Report of the Research Laboratories (1948) were distributed at the Convention, and an additional copy has been mailed to each canner-member.

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